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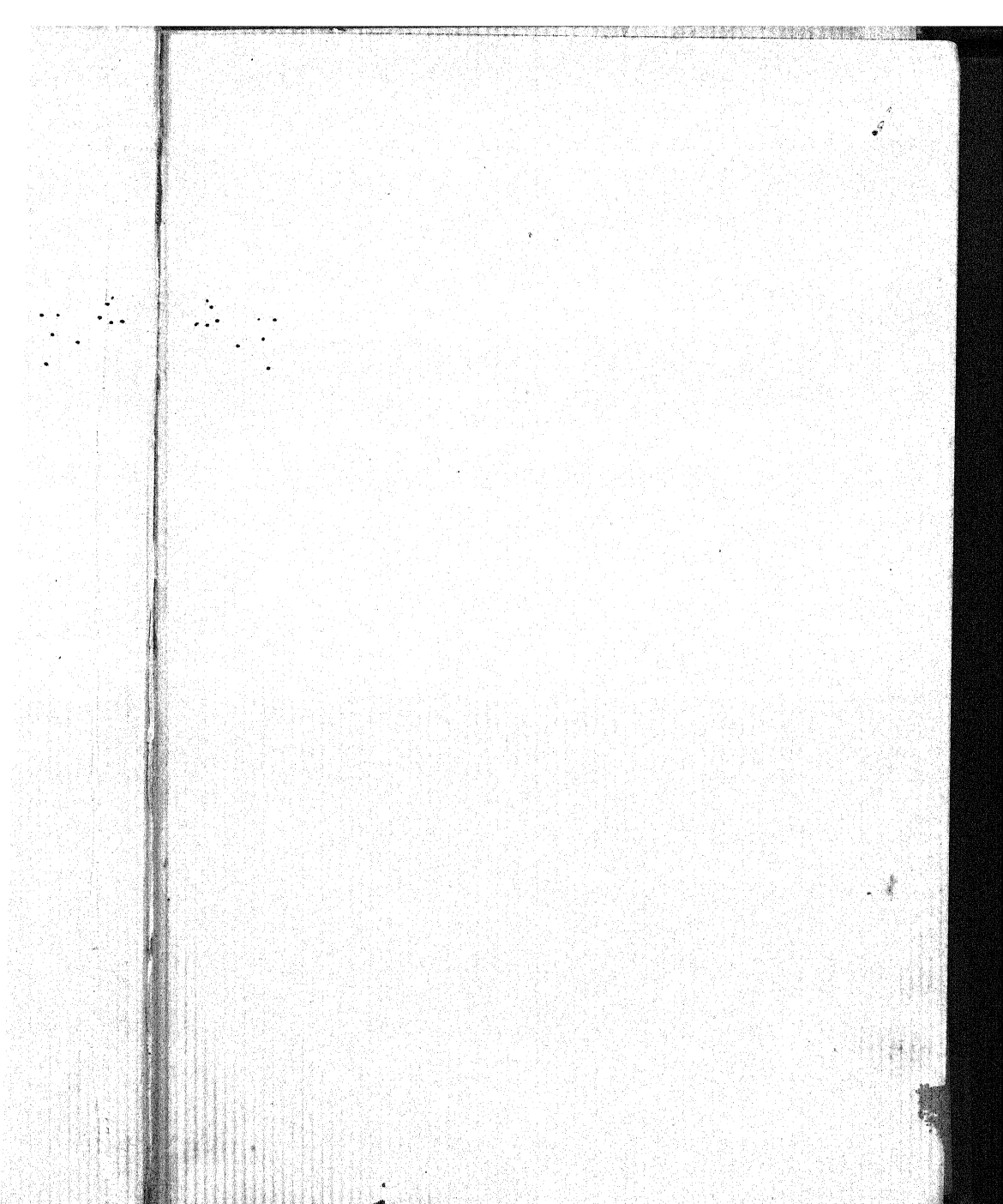
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AUTHOR OF "A GEOGRAPHY OF COMMODITIES"
ETC.

*WITH NUMEROUS ILLUSTRATIONS
MAPS AND DIAGRAMS*



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PREFACE

THE aim of this book is to present the geography of Europe in a way specially adapted to the needs of pupils preparing for examinations of the General Schools standard. Two points in particular have been borne in mind: (a) that the syllabus of these examinations is very wide, and (b) that on this account pupils have to do a considerable amount of individual work. Accordingly the subject-matter in this book has been made reasonably brief, avoiding, nevertheless, anything in the nature of summaries that savour of cramming. Each carefully selected topic has been treated lucidly, always with the intention of presenting the geography as a live subject intimately concerned with the Europe of to-day. Particular stress has been laid on a planned series of exercises; and care has been taken to make this work creative and not automatic, and to ensure that the necessary information for the exercises is complete and available in the text, yet never quite in the form in which the maps, problems, etc., demand it. The sketch-maps, purposely drawn in a variety of styles, do not replace an atlas, but are definitely connected with matter in the text or exercises.

The author wishes to acknowledge his indebtedness to the compilers of *The Statesman's Year-book* and *The Statistical Year-book of the League of Nations*, to *The Chambers of Commerce Atlas*, to several friends who have allowed the reproduction of photographs, and, for illustrations and much useful information, to the Austrian Federal Railways, the Belgian National Railways, the Belgium-Luxembourg Touring Office, the Blue Star Line, the Czechoslovak Legation, the French National Touring Office, the German State Railways, the Greek Legation,

A GEOGRAPHY OF EUROPE

the Royal Hungarian Legation, the Italian State Tourist Department, the Norwegian State Railways, the Polish Embassy, the Portuguese Information Bureau, the Royal Rumanian Legation, the Southern Railway, the Swiss Federal Railways, and the Yugoslavia Express Agency.

H. A.

CONTENTS

INTRODUCTION	PAGE 17
I. NORWAY, SWEDEN, DENMARK, FINLAND, ESTONIA, LATVIA, AND LITHUANIA	
NORWAY	21
SWEDEN	36
DENMARK	48
FINLAND AND THE BALTIC STATES	54
II. THE EUROPEAN PLAIN	
RUSSIA IN EUROPE	61
POLAND	93
✓ THE NORTH GERMAN PLAIN	105
✓ III. THE INDUSTRIAL REGIONS OF THE CHIEF EUROPEAN COALFIELDS	
THE SILESIAN INDUSTRIAL REGION	126
THE SAXON INDUSTRIAL REGION	131
THE RUHR INDUSTRIAL REGION	135
THE FRANCO-BELGIAN-DUTCH INDUSTRIAL REGION	142
IV. THE BASIN OF THE RHINE	
THE NETHERLANDS	152
✓ THE GERMAN RHINELANDS	163
SWITZERLAND	181
V. FRANCE	
UNITY AND DIVERSITY	205
THE CENTRAL MASSIF	208

A GEOGRAPHY OF EUROPE

	PAGE
ARMORICA: THE WESTERN PENINSULA	212
OTHER 'OUTER' HIGHLANDS	215
THE RHÔNE-SAÔNE CORRIDOR	219
MEDITERRANEAN FRANCE	226
THE WESTERN LOWLANDS: AQUITAINE	228
THE PARIS BASIN	232
BETWEEN THE RHINE AND PARIS	234
ALSACE AND LORRAINE	238
CHAMPAGNE	240
BETWEEN ARMORICA AND PARIS: NORMANDY	241
THE SOUTH OF THE PARIS BASIN	244
PARIS	245
PARIS AND FRANCE	247
STATISTICS	248

VI. THE BASIN OF THE DANUBE

AUSTRIA	268
HUNGARY	274
CZECHOSLOVAKIA	279
RUMANIA	286
YUGOSLAVIA AND BULGARIA	291

VII. THE MEDITERRANEAN LANDS

GREECE	324
ISTANBUL (CONSTANTINOPLE)	332
ITALY	333
SPAIN AND PORTUGAL	349
APPENDIX	369
INDEX	387

ILLUSTRATIONS

	PAGE
Bruges: A Religious Procession	<i>Frontispiece</i>
The Head of a Fjord	23
The Snout of a Norwegian Glacier	24
A Mountain Farm on a Saeter in Norway	25
The Interior of an Old Norwegian House	27
Part of the Skerry Guard	34
Hydro-electric Station and Factories in a Norwegian Valley	35
Typical Forest Country in Sweden	40
Modern Lumbering Methods in Sweden	41
Aerial View of Stockholm	43
Kiruna, in Swedish Lapland	46
A Lapp and his Home	47
A Little Farm in Denmark	49
Delivering Milk at a Co-operative Dairy in Denmark	50
An Aerial View in Finland	55
A Peasant's Home in Estonia	58
Tractors in the Central Black Earth Region	67
A Camping Scene in the Caucasus	78
Moscow, Very Old and Very New	82
Russian Peasants at School	87
The New Metallurgical Works at Magnitogorsk	91
A Tributary of the Vistula on the Polish Plain	94
A Torrent in the Eastern Carpathian Region of Poland	99
Modern Coal-loading Machinery at Gdynia, Poland's New Port	102
Sorting Potatoes on a Farm in the North German Plain	110
The River Elbe at Hamburg	114
Lignite Workings	121
In Upper Silesia	129
An Electric Furnace in a Krupp Factory at Essen	134
	11

A GEOGRAPHY OF EUROPE

	PAGE
Retting Flax on the Banks of the River Lys	141
A Farm behind the Dunes of the Belgian Coast, not far from Zeebrugge	142
A Peasant Home in the Ardennes	143
A Part of the Ardennes within Easy Reach of Spa	144
A Lace-maker, near Bruges	145
Part of the Docks at Antwerp	147
Intensive Agriculture and Horticulture on Polder-land behind the Dutch Dunes	156
A Typical Black Forest House	169
Spring in Hessen	170
A Valley in Upper Bavaria	171
A South German Peasant	176
Steel-works near Saarbrücken	179
At the Top of the St Gotthard Pass in Summer	189
By the Lake of Geneva	191
The Umbrail Pass and the Münster Valley beyond	193
A Farmhouse High in the Alps	194
The Interior of a <i>Chalet</i> in an Alpine Village	196
Drying Hay under the Eaves of a Swiss <i>Chalet</i>	197
High Summer Pastures in Switzerland	198
A Street in a Swiss Mountain Village	199
Engelberg	203
Typical 'Puy' Country in the Central Massif	209
Making High-explosive Shells in the Schneider Munition-works at Le Creusot	211
Part of the Harbour at Marseilles	222
A View of Cannes	227
The <i>Normandie</i> being fitted out at Saint-Nazaire	231
A Typical View in Flanders	237
A Farmyard in Normandy	242
Packing Mistletoe near Honfleur, at the Mouth of the River Seine	243
The Danube Gorge below Linz and above Vienna	257
The Danube Gorge near the Iron Gate	258
Winter in the Hohe Tauern	271

ILLUSTRATIONS

	PAGE
A Field of Tobacco-plants	275
Typical <i>Puszta</i> Country on the Hungarian Plain	276
Another View showing the Flatness of the Hungarian Plain	277
Budapest, the Capital and only Large Town of Hungary	278
Bata Boot- and Shoe-factories at Zlin, in Moravia	282
Toys from Czechoslovakia	283
A Hop-field in Bohemia	284
A Czech Spa at the Foot of the Erz Gebirge	285
Scene in the High Tatras	287
A Village in Transylvania	288
Petrol-tanks at Constanta	290
Peasants in Yugoslavia	293
Limestone Mountains in the Dinaric Alps	294
The Dolomites	295
Split (Spalato), Yugoslavia's Adriatic Port	300
An Olive-branch	312
The Inner Courtyard (Patio) of a House in Seville	315
A Main Street in Salonika	326
Rugged Mountain-land in the Interior of Greece	327
Pruning Currant-vines	328
Cleaning Currants	329
Xanthi, in Thrace	331
Vesuvius	334
A Village in the Province of Abruzzi, in the Central Apennines	336
A Corner of Florence	337
A Fascist Parade in Rome	339
A Parade in the Stadium at Rome	340
A New Agricultural Colony South of Rome, in what was once a Malarial Marsh	341
Part of a New Road along the Shore of Lake Garda	344
Part of the Shore of Lake Garda	345
An Ore Port near Bilbao	355
In the Valley of the Upper Tagus	356
A Village near Malaga, with the Sierra Nevada in the Back- ground	357
Elche, in the South-east of Spain, between Murcia and Alicante	358

A GEOGRAPHY OF EUROPE

	PAGE
Terrace Cultivation	360
A View on the Plateau in Murcia	361
A Very Old Cork-oak	362
A Portuguese Bullock-cart	363
Peasant Homes in Portugal	364

MAPS AND DIAGRAMS

FIG.		PAGE
1.	The Plan of this Book	17
2.	Baltic Lands: Forest and Pasture	22
3.	The Fjords	29
4.	The Winter Gulf of Warmth	39
5.	The Distribution of some of the Main Russian Crops	66
6.	Industrial Developments in South Russia	73
7.	The Growth of Russia	75
8.	The New Ural Industrial Unit	90
9.	Moraines	106
10.	The North German Plain: River Systems and Distribution of Population	107
11.	Mountain Systems in Europe	122
12.	Silesia and Saxony	127
13.	The Ruhr	136
14.	The Ruhr— <i>continued</i>	137
15.	The Structure of the Rhine Basin	153
16.	Four Valley Types on the Rhine	165
17.	Switzerland: Structural and Occupational Divisions	183
18.	The Nappe Theory	188
19.	France: Geological and Economic	207
20.	Between Paris and the Rhine: Density of Population	236
21.	Four Textile Regions in France	239
22.	Central Europe: Structure and Routes	255
23.	Central Europe: Forests and Farms	269
24.	The Structure of Peninsular Italy and the Balkans	325
25.	The Structure of Iberia	351
26.	Comparative Areas: Uses of the Land	380
27.	Comparative Populations: Occupational Groups	381



A GEOGRAPHY OF EUROPE

INTRODUCTION

FIG. 1 is a map of Europe divided into regions corresponding to the sections of this book. The continent is a peninsula made of peninsulas; in no other part of the

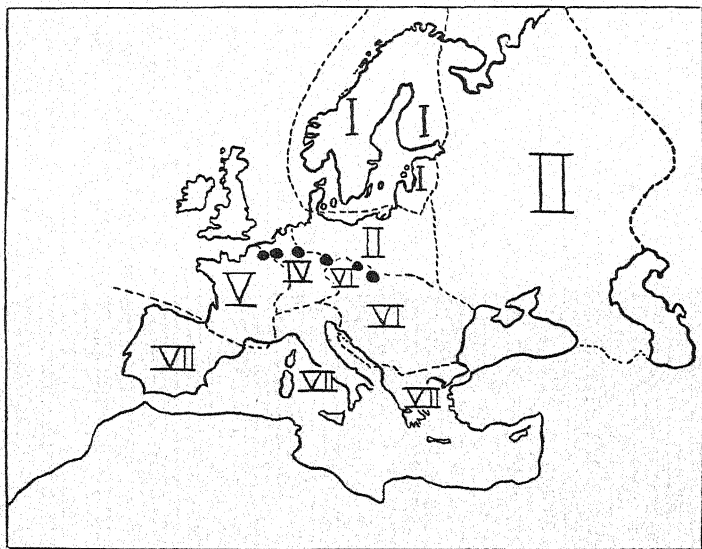


FIG. 1. THE PLAN OF THIS BOOK

The numbers on this map refer to the sections of the book; the black rings represent the big industrial areas described in Section III.

world does the sea penetrate the land to such an extent. Europe is "a crooked little house" whose very crookedness is the main cause of the complications of its countries'

A GEOGRAPHY OF EUROPE

affairs. A physical map of the continent in an atlas¹ shows three large regions—a highland region in the north, a larger and more complicated highland region across the south, and a wedge-shaped plain between, narrow in the west but widening eastward to the great square plain of Russia. These three physical divisions are the basis of the plan of this book; the subdivisions depend on other considerations. There are complications and exceptions in all the sections to be discussed later, but the main scheme is as follows:

Section I is concerned with the north-western highland block, but includes also Denmark and the new Baltic states. Section II deals with the plain area, and Sections III, IV, and V with regions in some way associated with the plain. Section III describes a series of uplands on the border of the plain; an economic map shows them as highly industrialized areas, while a population map marks them as very crowded regions. In Section IV the plain portion is Holland, but it is impossible to understand that country without knowing something of the river Rhine, of whose mud much of Holland has been formed; so Section IV covers the whole of the Rhine basin. The western terminus of the plain is dealt with in Section V, and it will be shown later how this area and its hinterlands focus on Paris, making a unified country of diverse pieces—a unit which is France. Section VI describes the basin of the river Danube, and Section VII the Mediterranean lands of Southern Europe.

Before starting the study of a new section it is worth while always to refer to Fig. 1 to note clearly the position of the region or regions and the relative place in the general scheme of the book.

NOTEBOOK WORK: I

(i) Write a note on the meaning of 'Arctic Circle,' and describe its course in Europe.

¹ The sketch-maps in this text-book are not intended to replace the maps in an atlas.

INTRODUCTION

(ii) Tabulate the latitudes of London, Brussels, Berlin, Warsaw, and Moscow.

(iii) Complete the following table:

LATITUDE	POINTS AT WHICH THE COAST OF WESTERN EUROPE IS CUT	CORRESPONDING PLACES IN WESTERN NORTH AMERICA	CORRESPONDING PLACES IN EASTERN NORTH AMERICA
60° N.			
50° N.			
40° N.			

(iv) Lat. 36° N. passes through the Strait of Gibraltar. Make a list of corresponding places in lat. 36° N. and 36° S. on the *west* coasts of continents, and bracket them together as 'Mediterranean' regions.

(v) Copy the following times for some European journeys and add some others from time-tables, guide-books, shipping news, etc.: London to Berlin by air, 8 hours; Berlin to Moscow by air, 12 hours; Hull to Copenhagen by steamer, 2 days; London to Copenhagen by air, 7 hours; London to Istanbul by train, 98 hours; Gibraltar to Port Said by steamer, 7 days.

SECTION I

NORWAY, SWEDEN, DENMARK, FINLAND, ESTONIA, LATVIA, AND LITHUANIA

NOTEBOOK WORK: 2

(i) Draw a map of North-western Europe to include all the countries of Section I. Mark their boundaries, and add also the names of bordering countries to the east and south. (There is more to put on to this map later, and the section in Exercise 2 (iii) should go on the same page as the map.)

Most of Norway and Sweden is a highland block of old hard rocks sloping down eastward to the Baltic Sea, but reappearing in Finland. The whole mass is bent into a hollow filled by a shallow sea, the Gulf of Bothnia. The structure is somewhat like that of the Laurentian Shield in Canada, with Hudson Bay in the hollow. The southern edge of the Baltic 'Shield' is marked by a distinct line of major physical features—the Skagerrak, the chain of lakes across Central Sweden, the Gulf of Finland, Lakes Ladoga and Onega, and the White Sea.

NOTEBOOK WORK: 2—*continued*

(ii) Shade on the map you have drawn the Baltic Shield and mark its southern boundary carefully.

(iii) Draw a section across a typical 'shield'-formation, and mark the portions that correspond to Norway, Sweden, the Baltic Sea, and Finland.

The Baltic Shield as a unit for a section in this book is not convenient because it excludes Southern Sweden. In many ways, too, Norway, Sweden, and Denmark form a distinct group; at different periods of history the whole area has been a united Danish or Swedish kingdom, and

NORWAY

the present political divisions are very recent developments. Norway, for instance, gained independence from alliance with Sweden only in 1905. The new Baltic states—Estonia, Latvia, and Lithuania—are included in this section with Finland because, although they are not part of the Shield, they form a definite political group with many common interests and with Governments quite distinctive from that of Soviet Russia, across the eastern borders.

NOTEBOOK WORK: 2—*continued*

(iv) Add to the map three shadings or symbols to show the Soviet form of government in Russia, the dictatorship in Poland, and Fascism in Germany. All the countries now to be studied in Section I have democratic government.

NORWAY

THE FJORDS

The Norwegian coastline is an amazing tangle of deep inlets called fjords, with a fringe of islands or islets along its whole length. Each fjord is a gully and a blind alley, with steep walls at both sides and a somewhat less precipitous slope at the inner end. Patches of lowland at the water's edge are rocky and small, except perhaps at the head of the fjord, where they become larger 'fans.' The water is sheltered, calm, and as deep as the cliff-walls are high. The sides of the fjord may have birch- or pine-trees clinging to their slopes, but bare rock-walls are frequent.

Beyond the cliff-tops, high above the fjord, the gradient changes suddenly and becomes gentler; here, in summer, grass and Alpine flowers grow. Still higher the slope changes again to the rock-precipices of towering peaks between some of which snow lies all the year in hollows. In many such basins the snow has become compressed by constant accumulation until eventually it is squeezed outward as the ice-tongue of a glacier, from the end of which

A GEOGRAPHY OF EUROPE

a muddy stream emerges to topple down the mountain-side through a *débris* of huge boulders.

The fjord is certainly not a very bountiful place in which to have to fend for a living. Then there is the

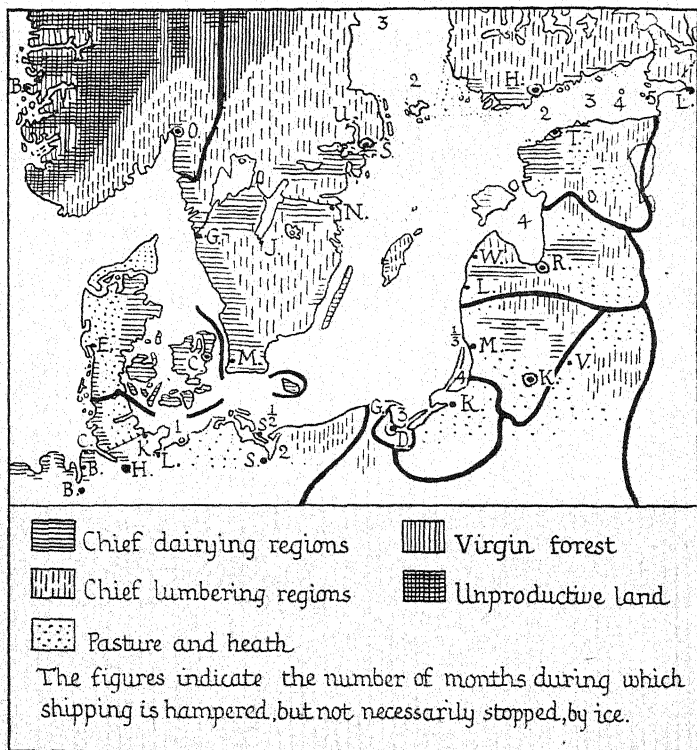


FIG. 2. BALTIC LANDS: FOREST AND PASTURE

weather to consider, for that is as much a part of people's surroundings as the land and the sea. In winter deep depressions advance from the Atlantic Ocean on to the Norwegian coast, causing gales at sea and lashing rains against the seaward cliffs. Day-time is very short in these

NORWAY

high latitudes, and the temperature is low; but the weather is not nearly as cold as one would expect, because the coast is exposed to warmer winds from the ocean and protected from cold east winds by the ridge of the elevated Shield (Fig. 4). Warm surface-water is drifted across the Atlantic Ocean against the whole Norwegian



THE HEAD OF A FJORD

Notice the shape of the valley-side, especially in the distance, and compare with the section in Fig. 3.

By courtesy of the Norwegian State Railways

coast, so that even in the far north, well inside the Arctic Circle, the sea is never frozen—a remarkable contrast with climatic conditions in the same latitudes on the American side of the ocean. Summer is short but pleasantly mild, with long spells of welcome sunshine and fewer depressions; there is no dark night-time at all, and beyond the Arctic Circle shines the midnight sun.

A GEOGRAPHY OF EUROPE

NOTEBOOK WORK: 3

Draw a map of the North Atlantic Ocean, and on it mark the ocean currents, distinguishing between the warm and the cold ones. Show (a) the Gulf Stream emerging as a definite narrow 'stream' of warm water from the Gulf of Mexico (notice, however, how soon the stream formation ceases and how the water spreads out fanwise); (b) the West Wind Drift



THE SNOUT OF A NORWEGIAN GLACIER

Notice the distant ice-field, the shape of the valley, the glacial stream, and the waterfall.

By courtesy of the Norwegian State Railways

piling the warm surface-water on to the North-west European coast (this Drift is *not* the Gulf Stream, and it is quite wrong to attribute the mildness of Western Europe to the Gulf Stream); (c) the north and south curving of the West Wind Drift on striking the coasts of Europe; and (d) the cold currents that, drifting down from the Arctic Ocean, creep close to the American shore, naming the Labrador Current and marking icebergs in its track. Label (e) the whole of the Western European side as 'The Mild Side' and the opposite American coasts as 'The Extreme Side.' Put a title to the

NORWAY

map, and add a short note beginning, "This map clearly shows . . ."

The surroundings of the fjord people are cliffs, waterfalls, shallow soils, deep, calm water, and towering mountains with some glaciers. Summers are short and mild; winters are long and dark, with heavy rains on the low-



A MOUNTAIN FARM ON A SAETER IN NORWAY

This view should be compared with that of a mountain farm in Switzerland at p. 198.

By courtesy of the Norwegian State Railways

lands and deep snow on the mountains. This part of Norway is not a kind land, but awesome and often angry; true, there is a grandeur in the setting, but people cannot make a living by admiring scenery. The poverty of the fjords drove the ancient Norsemen to seek elsewhere what they were unable to produce for themselves; they not only raided all the North Sea coasts, but visited lands as far south as the Mediterranean and as far west as

A GEOGRAPHY OF EUROPE

Iceland, Greenland, and Labrador, seeking loot or new, kindlier homes; and wherever they went they remembered in song and story their stern home in the north where Thor thundered among the mountains.

To-day life is still hard among the fjords. The bread crop has to suit a stony soil, a short summer with considerable cloud and rain, and a risky harvest-time. Wheat hardly grows at all in such conditions; but oats ripen quickly in cool cloudiness, barley is a hardy crop for mountainous land, and rye does not mind poor soil. Rye bread and oatmeal porridge are typical of Norway.

Grass grows green and luscious in a cool, damp climate, suggesting the keeping of cattle, especially dairy cattle. But the Norwegian farmer contends with two difficulties in this occupation. The little bits of arable land at the water's edge are too precious to be used wholly as meadows, and the long winter necessitates a supply of hay for indoor feeding of cattle. The first of these difficulties can be overcome by driving the animals (sheep and goats as well as cattle) up to the high pastures above the fjord cliffs; on these 'saeters' there is ample grass, clean and fresh. Up there the farmer builds for himself a second house as a dairy where butter and cheese can be made before being brought to the farm below. But in winter the saeters are snow-covered and stormbound; people and beasts desert them and descend to the valley. During this rather gloomy season the cows are often kept on the ground floor of the farmhouses, where they provide cheap central-heating for the farmers and their families living just above the byres. Grass has been cut during summer on the mountain pastures and even from the tufts on the cliff-sides, sent down to the farms on sledges or aerial ropeways, and dried, a little at a time, on sheltered fences and on clothes-lines, to provide winter fodder for the beasts.

Other crops include potatoes (which make a good substitute for bread, just as they do in Ireland and in North

NORWAY

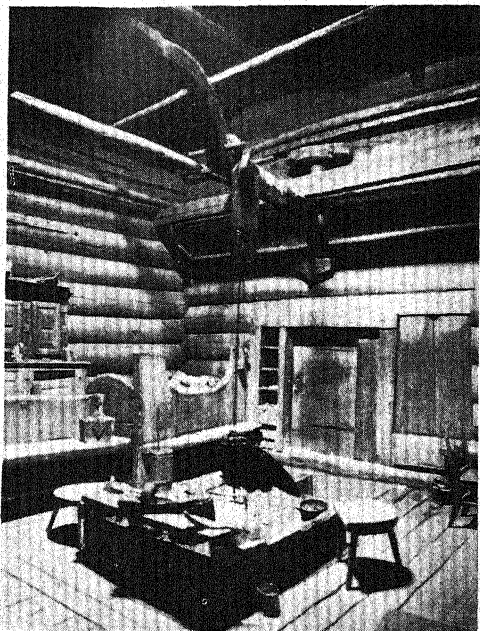
Germany), turnips, and greens; apples and cherries both ripen, but the space for orchards is so limited that humble mountain berries like the bilberry and cranberry are more typical fruits. The rivers supply fine trout, and the sea yields a harvest of cod, herring, and mackerel.

Altogether, if the people are to live without any food from abroad their diet is bound to be simple and rather monotonous, but will be healthy enough to produce a fine race.

The fjord home may be of stone or timber or both; actually, in the fjord districts proper, timber is not so plentiful as to warrant thoughtless use, and the prevalent birch is only

small. Peat, cut from the mountain bogs, is a common fuel more economical than logs that might be used to better purpose in the home.

It should be noted now that this description of life in Norway refers to the rocky, western fjord-coast; a happier and more prosperous Norway in the south is described later.



THE INTERIOR OF AN OLD NORWEGIAN HOUSE

This picture should be compared with that of the inside of a Swiss house at p. 196.

By courtesy of the Norwegian State Railways

A GEOGRAPHY OF EUROPE

NOTEBOOK WORK: 4

Copy the section across the fjord in Fig. 3 and mark on it the occupations of its different regions.

EXPORTS

The seas round Norway teem with fish—cod in the north (round the Lofoten Islands and Finmark) and herring in the south (off Haugesund and Stavanger). Cheap fish, dried, salted, canned, smoked, or packed fresh in ice, finds a ready market in other European countries that have no fisheries, are short of meat, or demand a fish diet for religious reasons. Cod-liver oil and other fish-oils find a world market. At Stavanger there are seventy factories engaged in canning fish for the export market; Aalesund shares in this herring trade; Kristiansund is the centre for dried cod; but Bergen is the chief fishing-port. Norwegian boats fish also on the North Sea banks and as far away as Iceland, Greenland, and Spitsbergen (Svalbard). Hammerfest and Tromsø are centres for the northern fisheries, which include sealing around the Barents Sea and Eastern Greenland and whaling, which used to centre in the Arctic, but is now carried on chiefly in the Antarctic.

The forests yield soft woods for cheap timber and for paper. This industry is more important in the south-east of Norway, where the cliff face is less sheer and where there is shelter from westerly gales. One-fifth of the whole area of the country is forest.

The old rocks of the Shield contain fine granite for decorative purposes and cheaper stone for kerbs and pavements. The leading mineral product is iron ore from mines in the far north on the border of Finland; copper and nickel ores also are mined.

Two new developments are important. Because of the structure, the action of ancient glaciers, and the heavy rainfall, Norway has many waterfalls, which are being

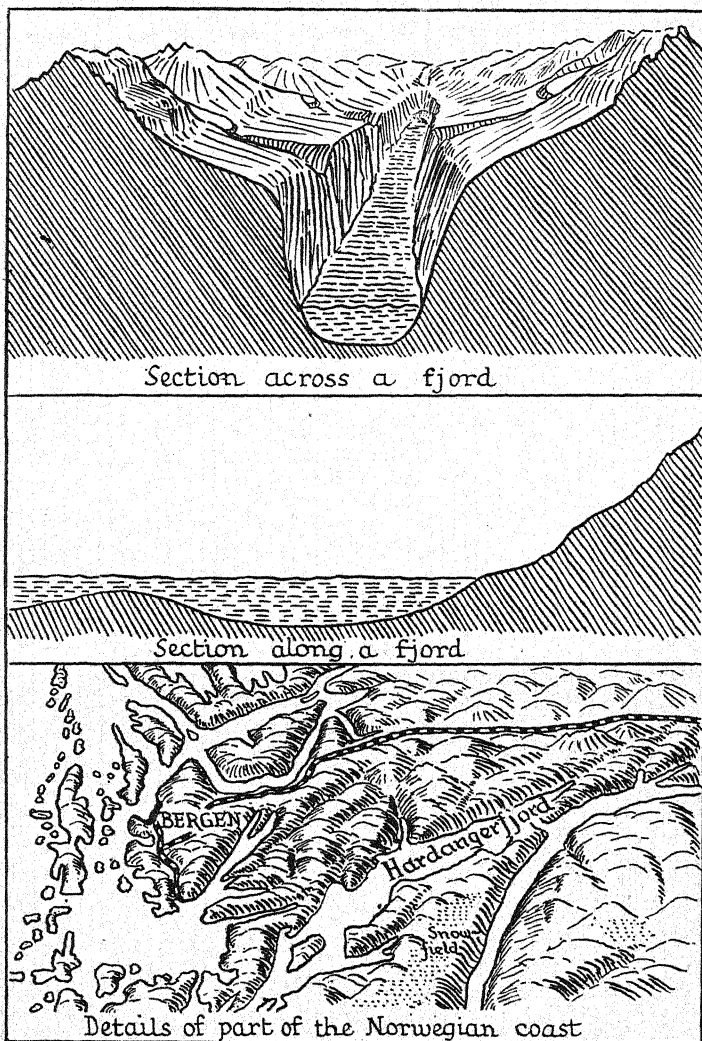


FIG. 3. THE FJORDS

A GEOGRAPHY OF EUROPE

harnessed to produce electric power. Where such power is needed in a cheap, plentiful, and continuous form, as for electric furnaces, Norway can offer advantages second to no other country. Such furnaces are used to smelt aluminium, to make limestone and coke (imported) into calcium carbide, and to produce synthetic nitrates (as chemical manures) from the nitrogen of the air. There are more than 20,000 electric works in the country, and the number is increasing rapidly, for only one-fifth of the possible power is at present harnessed.

Finally there is the tourist trade; Norway has scenery to sell, and the money spent by visitors is a considerable source of income to the country.

Norwegian ships not only carry the produce of their own country, but take a large share in transit trade all over the world. Although Norway was neutral during the last war, 20,000 of her sailors lost their lives by torpedoes and mines.

The Arctic coal-mines in Spitsbergen belong to Norway; they are her only home supply and produce up to 300,000 tons annually. To Norway they are of considerable importance, but in world coal-production they are negligible; to geographers they are interesting as telling a story of past tropical conditions in what is now an Arctic land.

[The statistics that follow and others throughout this book are not in themselves geography; they are mathematical statements of fact which have different inner meanings according to the readers' interests. The geographer looks at such figures as continuing the study of surroundings and of the consequent lives and outlook of peoples. The memorizing of statistics is a futile occupation, for they constantly change; but intelligent 'reading between the lines' from a geographical point of view helps to verify theories and to give them their proportional importance. The figures are the most recent available.]

NORWAY

For comparative area, uses of land, comparative population, and occupations of the people see Figs. 26, 27.

PRODUCTION OF CERTAIN CROPS IN 1933, IN 1000 QRS.

Potatoes	4,950.0
Oats, rye, barley, and some wheat	1,976.8
Hay (tons)	2,037.9

VALUES OF SOME NORWEGIAN PRODUCTS IN 1933, IN MILLIONS OF KRONOR

Forests

Unwrought timber exported	11.7
Wood-pulp and paper	128.0

Fisheries (1932)

Cod	20.3
Herring	15.9
Whale, seal, walrus	3.6
Others	22.8

Minerals

Ores	21.6
Aluminium	27.5
All metals and alloys	62.9

SEA FISHERIES IN 1932, IN 1000 TONS

United Kingdom	1,041
Norway	1,004
Germany	371
Japan	3,020
Korea	1,168
U.S.A.	835
Canada	341

NUMBER OF WHALES CAUGHT IN 1933

World	28,668
British whalers	12,940
Norwegian whalers	12,644

TRADE IN 1932, IN MILLIONS OF KRONOR

VALUES OF MAIN EXPORTS		VALUES OF MAIN IMPORTS	
PRODUCT	VALUE	PRODUCT	VALUE
Forest produce	164.3	Mineral produce (including metals)	182.9
Animal produce (fish)	120.0	Foodstuffs	164.7
Mineral produce (including metals)	161.5	Finished textiles and textile materials	113.0

A GEOGRAPHY OF EUROPE

DIRECTION OF TRADE IN 1932, IN MILLIONS OF KRONOR

NORWAY SELLS TO	VALUE	NORWAY BUYS FROM	VALUE
Great Britain and Ireland .	149.4	Great Britain and Ireland .	146.1
Germany	147.3	Germany	68.8
Sweden, Denmark, Finland .	98.3	Sweden, Denmark, Finland .	64.9
North America	68.6	North America	52.8
Holland and Belgium	51.9	Holland and Belgium	39.2
Mediterranean countries . .	28.7	Mediterranean countries . .	36.0
Russia	25.5	France	34.9
France	24.4	Russia	32.2
Argentina	23.3	India	8.7
Poland	17.2	Argentina	6.9
		Australia and New Zealand .	5.7
		Poland	2.5

NOTEBOOK WORK: 5

Graph the following climate figures¹ for London, Bergen, and Oslo, all on the same scale, and write a note on them:

		JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
London {	Temp.	38	39	42	47	53	59	62	63	57	50	43	40
	Rain.	2.0	1.5	1.5	1.7	2.0	2.0	2.5	2.4	2.3	2.8	2.3	1.8
Bergen {	Temp.	34	34	36	42	49	55	58	57	52	45	39	36
	Rain.	9.0	6.6	6.2	4.3	4.7	4.1	5.7	7.8	9.2	9.3	8.5	8.9
Oslo {	Temp.	24	24	29	39	50	60	63	60	52	41	32	24
	Rain.	5.1	3.6	3.2	2.4	2.5	2.1	3.1	4.2	5.4	5.7	4.8	4.4

TOWN-SITES: GENERAL NOTE

There are newborn baby towns; doddering old-man towns; towns in a hectic whirl of youth; poor, gutter-snipe towns; fat, millionaire towns; quiet, studious towns; loud, blatant towns; towns with all the luck, and towns with no luck at all; dying towns; dead towns. Towns are very human. Geography tries to explain the growth and fortunes of towns in an orderly manner. The

¹ Throughout this book temperatures are given in degrees Fahrenheit and rainfall in inches.

NORWAY

way to tackle town-site questions is to start at the beginning and imagine the land with no towns at all. The physical map, the natural vegetation map, and a little imagination can produce this primitive setting. On to this scene came people, exploring their newly found land and searching for the 'best' places. The study of town-sites is mainly a study of the best places; they may be best for food-supply, best for defence, best for attack, best for trade, best for government, but from some point of view they are choice spots. Geography seeks to find that point of view.

TOWN-SITES IN NORWAY

For comfort and easy living a fjord is not a choice spot. Each Norwegian fjord is a blind alley containing a little community shut off by steep walls from people in neighbouring fjords. But every one of these *culs-de-sac* opens at its seaward end, not straight on to a wild Atlantic Ocean, but on to a narrow and much calmer 'street' of water sheltered from the storms of the open ocean by a continuous chain of islands, the *skjaergaard* (Skerry Guard). The calmness attracts the boats from every fjord into this 'street'—the Inner Lead—so that it becomes a highroad where neighbours meet, gossip, and make exchanges. Bergen, Stavanger, Tromsø, and Hammerfest are shops on the pavement of the Inner Lead; places inside the fjords correspond to the houses in quiet side-streets with little traffic; the towns have grown at convenient meeting-places for groups of fjord peoples. Bergen is the largest of these towns, and, primarily a fishing-port, it is as far out to sea westward as any place in Norway can possibly be. Hammerfest and Tromsø, in the less attractive north, are much smaller. Narvik, sheltered behind the Lofoten Islands, is the ice-free terminus of a railway from the iron-mines of Northern Sweden; the ore is exported westward through Narvik during the five months when the Gulf of Bothnia is frozen.

A GEOGRAPHY OF EUROPE

But the choicest part of all Norway is Sörland, the south coastal region and the land west of Oslofjord. Here are most lowland and arable land, greatest warmth and shelter, the richest vegetation, and most people. Oslofjord is at so peculiar an advantage that it is hardly typical as a fjord, for it has a 'back door.' True fjords are excellent



PART OF THE SKERRY GUARD

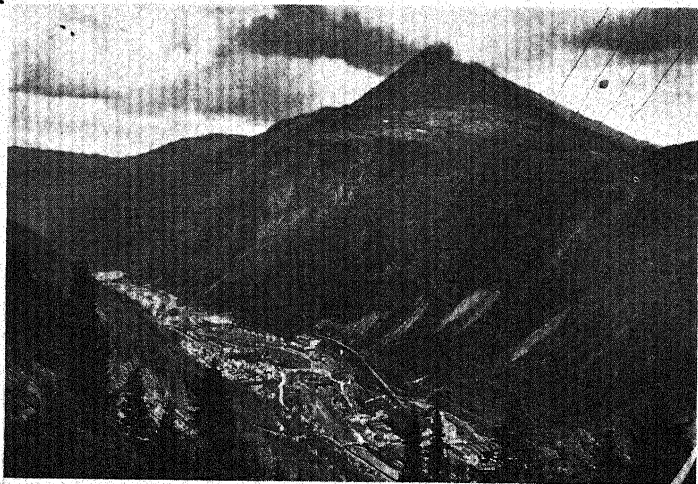
By courtesy of the Norwegian State Railways

harbours, but they lack hinterlands: they are like palatial lodge-gates and carriage-drives without the mansions beyond. Oslofjord leads landward into the Glommen valley, a narrow but fertile trough worn by river and ice almost right through the Shield to Trondheim, so that this last-named town also is fortunate in having a back entrance.

The slope of the Shield, the wealth of the farm-land, the forests, the minerals, the waterfalls, and the inviting shape of Oslofjord have all contributed to make Oslo the capital and the centre of trade. At the city are

NORWAY

shipbuilding yards depending partly on supplies of native timber, much on imported steel, machinery, and other timber, but mainly on the innate skill of the people, who throughout their history have been a seafaring nation. Forest resources supply sawmills and pulp- and paper-mills, which all use hydro-electric power. Textile mills



HYDRO-ELECTRIC STATION AND FACTORIES IN A NORWEGIAN VALLEY

The valley shows marked effects of glaciation. Compare this view and that of Engelberg at p. 203.

By courtesy of the Norwegian State Railways

are a recent, artificial growth; all the raw material, often semi-manufactured, has to be imported, as well as the whole factory equipment. Local supplies of ore have given rise to a smelting industry on the west coast of the fjord.

Trondheim is the old capital, and the kings of Norway are still crowned there. In less settled days Oslofjord was rather too inviting for attack; Trondheim grew on the western fjord coast in the one place that offered the advantage of the Glommen valley route southward and also

A GEOGRAPHY OF EUROPE

security from surprise attack. Trondheim Fjord has more lowland than other western fjords, and has also a secondary route over the mountains into Sweden.

NOTEBOOK WORK: 6

Draw a map of the southern half of Norway; shade the high land and note its height (*cf.* the peaks of the Grampians); show the areas of (*a*) most forest, (*b*) most farming, (*c*) most fishing, and (*d*) most people. Mark Oslo, Trondheim, and Bergen, and the Oslo-Trondheim, Oslo-Bergen, Oslo-Swedish, and Trondheim-Swedish railways. Show by arrows the Inner Lead route, the Skagerrak route, and the Glommen valley route.

SWEDEN

THE SURROUNDINGS

Swedish surroundings are in marked contrast to those of Norway, and two distinct types of country in Sweden are in marked contrast to each other. North of Lakes Vänern and Vättern Sweden is an uneven slope of rugged land descending in a series of broad steps to the hollow of the Shield, from whose western, upturned edge many rivers scurry in straight courses to the Gulf of Bothnia and the Baltic Sea. A vegetation map shows that this area is part of a great belt of pine-forest; and so to the picture of rivers, cascades, and long 'finger lakes' must be added the sombre green of summer pines and spruce or their black outlines against snow in winter.

Sweden south of the Vänern-Vättern line—*i.e.*, south of the Shield—is a low land of young rocks, except in the centre, where in the undulating plateau of Småland old hard rocks reappear. The vegetation map marks the area as 'woodland, grass, and cultivation,' but the change of colouring on the map gives a wrong impression of a sudden alteration in the vegetation type. Actually the pines of the northern forest only very gradually give place to the branching oak, ash, and beech of the south, with their

SWEDEN

fresh greens of summer, their bare outlines in winter, and to grassy forest glades and cultivated fields.

CLIMATE

To these surroundings there must now be added the climatic setting. Most of Sweden is on the lee-side of the Shield, and so has less rain than the ocean coast of Norway; the structure exposes Sweden more to continental than to oceanic influences. Summer is warmer than in Norway because Sweden is farther from the cooling influence of the open ocean, while winters are much colder because the Atlantic is then a warming influence. The map of January isotherms in Europe shows a remarkable feature; the lines run generally north and south. We should expect winter to be colder farther north: it is not; the map shows that the colder winters are farther east, not north. For example, we should not expect Odessa, on latitude 47° N., on the Black Sea, to have the same winter temperature as the Lofoten Islands on latitude 69° N., but the map, based on fact, says that it is so. Again, in the British Isles we should not expect the Isle of Wight to be as cold in winter as the Shetland Islands, but it is so. In general, a set of places each colder than the previous one will be on a line going eastward, or, better, slightly north-eastward. The same fact stated the other way round is that in winter-time the warmth in Europe is coming from the west: the Atlantic Ocean and the winds blowing from it are the warming influences, and the farther from this ocean places are the severer become their winters.

The map of July isotherms shows that in summer-time in Europe, when the sun seems to swing north of the equator and when therefore its rays on Europe are more direct, the influence of the sun becomes prominent. Places farther south are much warmer than those in the north, and isotherms tend to run east and west. The ocean

A GEOGRAPHY OF EUROPE

is then a cooling influence, and on the western borders of Europe isotherms bend sharply southward as they approach the ocean; that is to say, places have to be 'nearer the sun' for their temperatures to remain the same.

NOTEBOOK WORK: 7

Graph only the temperature ranges of the two following groups of places. Add for each place its latitude and longitude. Write a note on what your graph shows.

—		—	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
Bergen	{	Temp. Rain.	34 9.0	34 6.6	36 6.2	42 4.3	49 4.7	55 4.1	58 5.7	57 7.8	52 9.2	45 9.3	39 8.5	36 8.9
Copen- hagen	{	Temp. Rain.	32 1.5	32 1.3	35 1.4	42 1.4	51 1.5	59 2.0	62 2.4	61 2.6	55 2.1	47 2.2	39 1.9	34 1.7
Upsala	{	Temp. Rain.	24 1.3	23 1.1	27 1.2	38 1.2	49 1.7	57 2.0	62 2.7	59 2.8	50 2.0	41 2.1	32 1.7	25 1.6
Leningrad	{	Temp. Rain.	18 1.0	18 0.9	24 0.9	36 1.0	48 1.6	59 2.0	63 2.5	60 2.8	51 2.1	41 1.8	30 1.4	22 1.2
Brest	{	Temp. Rain.	45 2.6	45 2.4	47 2.2	50 2.1	55 2.4	60 1.5	65 1.3	64 1.9	61 2.5	56 3.4	50 3.1	46 3.7
Paris	{	Temp. Rain.	37 1.5	39 1.4	43 1.6	49 1.7	56 1.9	62 2.1	65 2.2	64 2.1	58 1.9	50 2.3	43 1.9	38 2.0
Berlin	{	Temp. Rain.	30 1.7	33 1.4	38 1.6	48 1.5	57 1.9	63 2.3	66 3.0	65 2.3	58 1.7	49 1.7	39 1.7	33 1.9
Warsaw	{	Temp. Rain.	26 1.2	29 1.1	35 1.3	46 1.5	57 1.9	63 2.6	66 3.0	64 2.9	56 1.9	46 1.6	36 1.5	30 1.5
Moscow	{	Temp. Rain.	12 1.1	15 0.9	24 1.2	38 1.5	53 1.9	62 2.0	66 2.8	63 2.9	52 2.2	40 1.4	28 1.6	17 1.5

THE TWO SWEDENS

There are two sets of surroundings for the Swedish scene, at different heights and with different slopes, climates, rocks, and forests. Of the two the southern one has always been more attractive from every point of view except that of rugged beauty. To-day in the south of the country, especially near the coast, much of the original forest has been cleared, just as it has in Britain, to give

SWEDEN

place to rich meadows and cultivated land. Coolness, shortness of summer, and risk of harvests being spoilt by rain tend to make green crops more important than cereals; hardy grains like oats, rye, and barley are largely grown, but grass, potatoes, and turnips are the main crops. Sweden is a very important dairying country, the methods

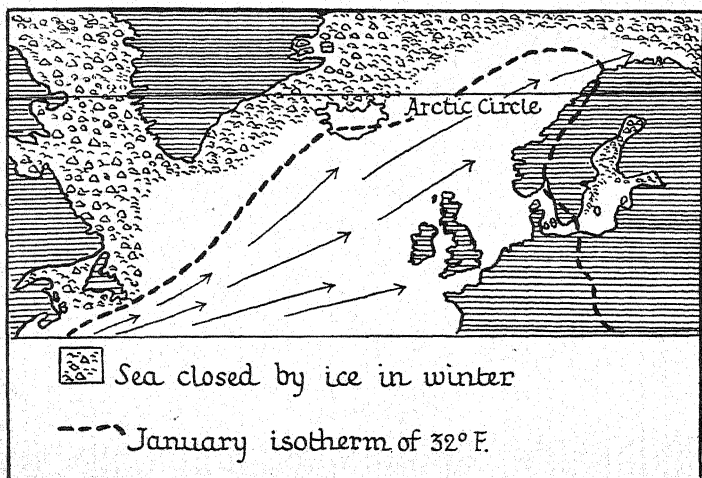


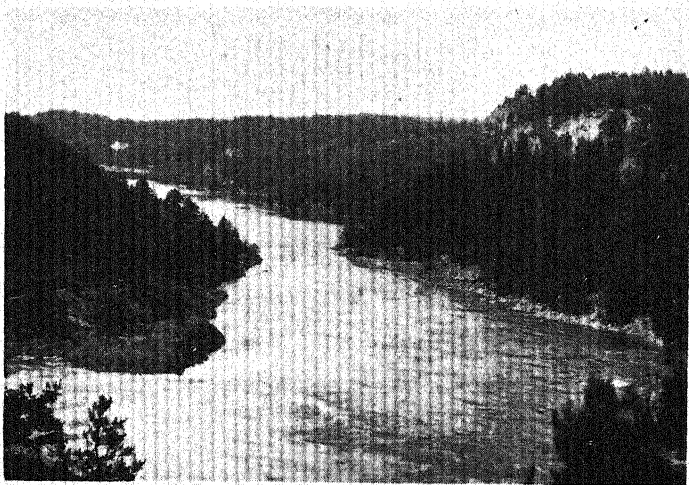
FIG. 4. THE WINTER GULF OF WARMTH

of production and marketing being an imitation of Denmark's, to be described later. Flax is a special crop, and the making of linen is a cottage craft practised all through the country; the simple designs of check and stripe and the limitation to a few gay colours make these Swedish fabrics most attractive.

In Northern Sweden man wrests a living either from the forest or from the mineral veins in the hard rocks. Trees are felled mainly in winter, when the sap is lowest and sawing is easiest, when the ground is frozen and haulage is least laborious. The logs are dragged to the

A GEOGRAPHY OF EUROPE

frozen rivers and lakes, and stacked to await the thaw. In spring and summer felling is not so active, the lumberjacks being busy floating the logs, in the floods of melting snow, downstream to the sawmills which are situated where there is power from waterfalls and where transport of the bulky produce to overseas markets will be easiest—*i.e.*, as



TYPICAL FOREST COUNTRY IN SWEDEN

Think of the important parts played by climate and rivers in the lumbering industry.

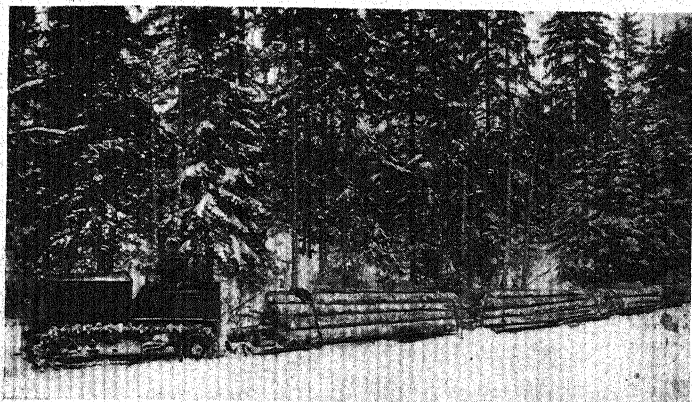
Photo E.N.A.

near the river-mouths as possible. The timber is shipped 'round' for masts, telegraph-poles, scaffolding, and pit-props, 'sawn' for joists, floor-boards, furniture, and boxes, and 'manufactured' into doors and window-frames of standard sizes, as pulp, as paper, and as matches. The markets are the industrial areas of Europe, more especially the big cities that use much newsprint.

The destruction of pine-forests, or of any other forests, is apt to be a wasteful industry, thoughtless of the future;

SWEDEN

men forget that the forest is felled far more quickly than it will ever grow again. And that is not the worst, for the removal of trees loosens the soil and allows the rain to wash away the precious layer, leaving barren rock. Desert rock-slopes after deforestation are a sad heritage that more than offsets the profits from the timber, and so most lumbering countries now realize the importance



MODERN LUMBERING METHODS IN SWEDEN

Photo E.N.A.

of regulated felling and of systematic replanting. In Sweden the Forestry Board is most active in the orderly preservation of this great natural resource of the country.

NOTEBOOK WORK: 8

Turn the following figures of a coniferous-forest climate in Sweden into a calendar of the year's work in lumbering: note the frozen season, the snowfall, the felling time, the thaw, the floating time, the time when sawmills are busiest, the time for prospecting for further felling, and the time when forest fires do worst damage.

A GEOGRAPHY OF EUROPE

SUNDSVALL: TEMPERATURE AND RAINFALL¹

—	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
Temperature	20	18	26	34	43	54	59	57	49	39	29	20
Rainfall	1.6	1.2	1.1	1.1	1.3	1.6	2.0	2.1	2.4	2.2	2.0	1.4

MINERALS

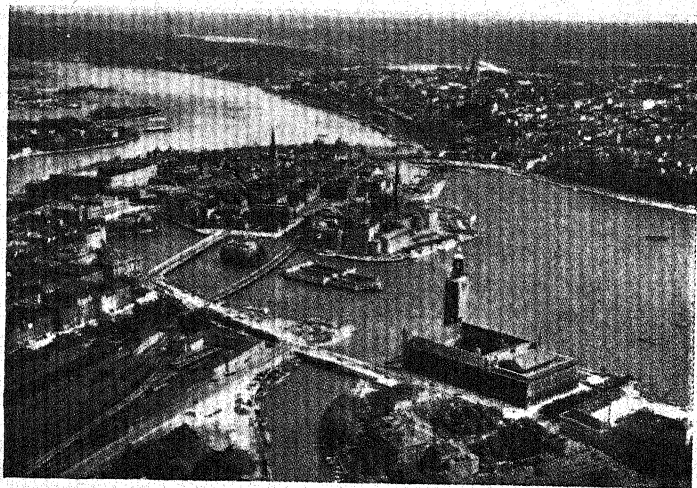
It is generally in old, hard rocks that mineral-veins occur. Their presence is revealed by outcrops at the surface. Such veins are mostly only thin streaks of metal or ore surrounded by tons of worthless rock; veins have to be of very special thickness and consistency, and mining has to use elaborate scientific aids, before the industry is worth while. But Nature, by the action of rain, streams, ice, wind, and chemical erosion, mines all veins indiscriminately—thick or thin, rich or poor—and the erosive agents carry their loads far away from the parent rock. Often in the process there is considerable sorting out according to the weights of the constituents of the loads. Such wholesale ‘mining’ and sorting produce through long ages collections of minerals far from their original location, and these secondary deposits, as they are called, are often of more value than the primary deposits whence they were derived.

Sweden is fortunate in that the Shield contains some specially rich deposits of high-grade iron ore. There are two mining areas: one is in the far north at Gellivare, whence an electric railway runs to both the Gulf of Bothnia (at Luleå) and the Atlantic (at Narvik); the other is at Dannemora, in the south of the Shield, where also copper (at Falun) used to be of great importance but is

¹ When the temperature is well below 32° F. ‘rainfall’ is snowfall, but the figures given are always for snowfall reduced to rainfall. A rough approximation for converting rainfall into snowfall is to multiply by ten. At temperatures about 32° F. in the tables in this book the rainfall may be rain, snow, or sleet, for the temperature figure is the average for a month with many variations.

SWEDEN

now almost worked out. Sweden has only a little coal. Charcoal from the forests used to be the fuel for smelting iron ore, just as it once was in the Weald and in the Forest of Arden: the blacksmith's craft is very old in Sweden, and the Norse gods had their forges among the clouds and thunder of the highest mountain-peaks.



AERIAL VIEW OF STOCKHOLM

Photo E.N.A.

To-day some Swedish ore is still smelted with charcoal and some in electric furnaces; the resultant iron is of a quality in demand at places, like Sheffield and Solingen, where specially fine steels are manufactured: most ore is, however, exported as ore to be smelted in the blast furnaces on the large coalfields of Europe.

TOWN-SITES

NOTEBOOK WORK: 9

(i) Turn Fig. 2 into a series of notes about town-sites in Sweden as follows: (a) The 'choice places'—where and why;

A GEOGRAPHY OF EUROPE

(b) routes and the meetings of routes; (c) town-sites in Sweden that correspond to London, Bristol, Dover; (d) the site of Stockholm as a capital (why it is called "the Venice of the North").

(ii) Draw a special map of the lake route across Sweden; show the Göta canal and towns associated with the route.

(iii) Tabulate the industrial products of the large towns noted below, and in a second column link the produce to the country's resources and needs, and to supplies of raw materials from abroad (the statistics that follow will help):

Stockholm. Machinery (what kind?), shipbuilding, leather, pottery, chemicals, sugar, paper, timber.

Göteborg. Pottery, linen, cottons, woollens, machinery, shipbuilding, leather, timber, sugar, paper.

Norrköping. Iron and steel, woollens, cottons, paper, timber, shipbuilding.

Jönköping. Matches. (Johan Lundstrom's choice of site at Jönköping for his first match-factory seems to have been almost accidental, for many other places in Sweden have similar facilities.)

STATISTICS

For comparative area, uses of the land, comparative population, and occupations of the people see Figs. 26, 27.

EXPORTS IN 1933, IN MILLIONS OF KRONOR

Pulp, paper, and timber	540.7
Mineral products	210.8
Electrical and other machinery	87.6
Animals and animal substances	70.5

IMPORTS IN 1933, IN MILLIONS OF KRONOR

Metals and metal manufactures	375.0
Foodstuffs	260.8
Textiles and textile materials	198.6
Chemicals, dyes, etc.	104.5

PERCENTAGES OF EXPORTS TO CERTAIN COUNTRIES IN 1933

Great Britain and Ireland	27 per cent.
U.S.A.	12 per cent.
Germany	10 per cent.
Denmark	7 per cent.

SWEDEN

PERCENTAGES OF IMPORTS FROM CERTAIN COUNTRIES IN 1933

Germany	29 per cent.
Great Britain and Ireland	18 per cent.
U.S.A.	10 per cent.
Denmark	6 per cent.

TIMBER FACTORIES IN 1933

DESCRIPTION	NUMBER	VALUE OF PRODUCTS, IN MILLIONS OF KRONOR
Joinery and furniture	1085	69.1
Sawmills	1012	196.7
Pulp	100	240.5
Paper	77	105.7

IRON ORE TRADE IN 1933¹

Raised	2,656,127 tons
Exported	3,100,876 „

GROWTH OF INDUSTRIAL POPULATION

YEAR	PERCENTAGE OF ENTIRE POPULATION IN INDUSTRY
1900	29.1
1910	37.8
1920	44.2
1934	Probably 50

THE LAPPS

The Lapps are an unimportant people, but interesting from a geographical point of view in the way they fend for themselves in some of the harshest surroundings in the world. They live in the far north of Norway, Sweden, and Finland beyond the limit of even the hardy pine-trees;

¹ The apparent discrepancy in these figures is caused by the export during 1933 of a quantity of iron ore raised previously. See also p. 139.

A GEOGRAPHY OF EUROPE

only stunted trees, shrubs, and mosses survive the tundra climate of long, cold winters and very short summers. The tundra is not quite a cold desert. In winter it is completely frost-bound—not only the rivers and lakes but moisture deep in the ground being frozen. Over all is a thin layer of powdery snow, for the air is too



KIRUNA, IN SWEDISH LAPLAND

This large town is only one of several that have grown up at extraordinarily rich deposits of iron ore in an otherwise unattractive region on the borders between stunted coniferous forests, treeless tundra, and the cold deserts of mountain summits.

Photo E.N.A.

cold to contain much vapour and so condensation is only slight. Long darkness adds to the rigour of winter. The spring thaw is slow in coming, but by summer-time surface-water is free and days are sunny and even hot. The subsoil, however, never thaws, and in consequence downward drainage is impossible, so that large areas become swamps of icy water. In favoured patches of drier land, sheltered from cold winds and facing the sun, plant-life appears as a carpet of moss and flowers such as Iceland poppies, forget-me-nots, rock-roses, and geums.

SWEDEN

Summer, however, is all too short, perhaps of only two months' duration, and winter soon freezes the land again.

In such surroundings the Lapps eke out an existence. They have herds of reindeer which summer and winter



A LAPP AND HIS HOME

By courtesy of the Blue Star Line

forage on lichen, and supply the people with meat, milk, hides, and bone. Sea and river provide fish. Lapps are nomads who must wander with their reindeer searching for new pasture. Their homes are skin tents like wigwams or low huts made of earth with branches of dwarf birch, and their dress is leather and furs. Nowadays in

A GEOGRAPHY OF EUROPE

summer-time some Lapps frequent the northern fjords of Norway, awaiting the big liners with crowds of tourists, to whom they sell spoons made of reindeer-horn and satchels of hide.

Racially too the Lapps are a strange people, distinctly Eastern with their slant eyes, high cheek-bones, and flat noses; they are obviously no relations of their tall, fair, Scandinavian neighbours. The Finns are somewhat akin to the Lapps, but whereas the latter are most backward and primitive, the former are progressive and have produced writers and musicians of first rank.

NOTEBOOK WORK: 10

Make a page of small drawings of the homes of various nomads. Include an army bell-tent, a marquee, a gipsy caravan, a wigwam, an igloo, a yurt, and a low, flat Arab tent. Write a short note that explains the variations in these movable homes: think of the surroundings of each people in order to explain why they are nomads, their mode of life, and the supply of timber for tent-poles (particularly to explain the shapes of their houses).

DENMARK

A MODEL DAIRY

Denmark has shown the world how to manage a successful dairying business. The label "Danish" is a guarantee of quality. Danish produce goes all over the world, and has some of its biggest sales in countries actually better suited for dairying than Denmark is. Competitors for this huge trade succeed only when they imitate Danish methods. The development of Denmark's trade has been recent and rapid, while the growth of the trade of her imitators has been amazing. A study of Denmark's setting reveals little to suggest that the country should lead the world in dairying. It is a small peninsula

DENMARK

with, on its eastern side, many islands separated by straits which are often impeded by shoals. The soil is not particularly rich, and in some large tracts is so poor as to be the natural home of heath and sand-dune. The climate is mild; summers are cool, winters are raw, and cloud, drizzle, and fog are common.



A LITTLE FARM IN DENMARK

The milk on the carts shown at p. 50 came from many small farms like this one. The idea of the co-operative creamery is to help the farmers to sell their produce by a strict standardization of its quality.

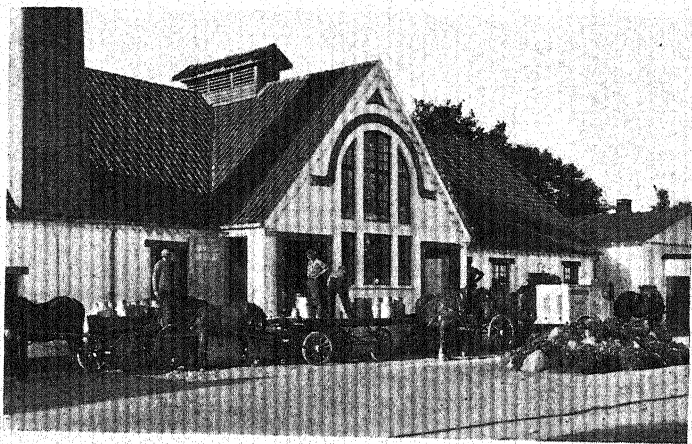
Photo E.N.A.

Denmark's success in dairy-farming is due mainly to co-operation—that is to say, to a human factor not geographical. It might be argued that such united efforts are the result of certain natural surroundings, but there is an impish strain in human nature that somehow defies co-operation. Whatever the causes, Denmark has been almost alone among nations in methods of co-operative action. Communism in Russia, Fascism in Italy, and the Nazi movement in Germany are all based on the ideal of united effort, but differ from the Danish

A GEOGRAPHY OF EUROPE

method in the drastic compulsion attendant on their schemes.

Consider first the factors that lead to co-operation in dairy-farming. Rainy mildness makes Denmark a land of green grass; cereals are grown, but grass and roots do better, and these are cattle foods. That is the geographical basis of dairying, whether it is in Denmark, Holland,



DELIVERING MILK AT A CO-OPERATIVE DAIRY IN DENMARK
Photo E.N.A.; Jonals Co., Copenhagen, Photographers

Ireland, the lower St Lawrence, Cornwall, New Zealand, or anywhere else—they are all cool lands of green pasture continually freshened by gentle showers. But other factors make or mar dairying. It is an industry spoilt by trifles; it demands careful thought, scrupulous cleanliness, intelligent labour, near-by markets for the perishable produce or elaborate, scientific packing and transport for distant markets; it is a task for the little farm rather than the big one; and it has many side-lines which help the industry to pay. Many little farms, however, imply many different farmers, with different methods, different staffs,

DENMARK

different standards of cleanliness, different qualities of stock, different feeding-stuffs, etc.; and these factors cause a wide variety in the produce of the farms. The aim of the co-operative dairies of Denmark has been to produce a *standard* quality good enough to gain the confidence of any customer, without risk of complaint. To achieve this object there must be some central authority to exercise supervision, which can be effective only if the number of dairies is reduced. Hence central creameries, central butter-factories, central egg-collecting stores, etc., are established. At the same time the initiative of the good farmer must be encouraged and the methods of his less skilful neighbour improved. The co-operative dairies are therefore very strict with their members; they will lend money and give advice, but will show no mercy to the slacker: payment is for results only. Creameries, slaughter-houses, bacon-factories, butter unions, insurance, and supplies of manure, fodder, machinery, seeds, fuel, and general stores—all are managed co-operatively with a central committee controlling the whole. It might seem as if the country would be strangled with red tape, but a model school system trains people to understand the limits of freedom, and the success of the scheme has produced one of the happiest countries in the world.

The Industrial Revolution, the consequent growth of very dense populations on coalfields, especially in Britain, and the resultant neglect of farming in that country were also factors that hastened Denmark's specialization in dairying, and were fortunate events for her, occurring just at the time when the export of home-grown corn could not compete with the cheaper American supplies.

Britain became a workshop, Denmark became a dairy, and the new empty lands across the ocean became wheat-fields—a series of specializations that seemed to be working to mutual advantage until very recently. To-day Britain's

A GEOGRAPHY OF EUROPE

factories have competitors almost everywhere, including the 'new' lands and Denmark; Britain cannot sell as she used to, and therefore cannot buy. As a result each specialized land is poorer, and, frightened at the tragic collapse of mutual exchanges, tends to recede within its own little boundaries, trying to be as self-supporting as possible. Denmark makes more factory-goods, and produces less butter because its market is smaller; Britain manufactures less, and devises butter schemes and bacon schemes for home produce; a country like Canada grows less wheat, makes more factory goods, and buys home-produced dairy-stuffs. Thus is produced a vicious circle that aggravates the depression, lessens international confidence, and stimulates jealousy—the present state of affairs, only partly ameliorated by reciprocal trade arrangements between pairs of countries.

In studying the following statistics¹ there are various considerations to be borne in mind: (a) the specialization in dairying; (b) the newer manufactures; (c) the world trade in dairy-stuffs; (d) the central position of Denmark in North-western Europe; and (e) Baltic trade.

EXPORTS IN 1933, IN 1000 METRIC TONS

Dairy-produce	480.7 (the bulk to U.K.)
Vegetable-oil products	214.0
Cement and chalk	273.1
Fish	43.6
Live animals	131 thousand head (mostly to Germany)
Eggs	1,070 thousands (70% to U.K.)

Farm (mainly animal) produce = 76 per cent. of the value of Danish exports.

67 per cent. of Danish exports go to United Kingdom.

¹ Adapted from *Economic Conditions in Denmark* (H.M. Stationery Office, 1934).

DENMARK

IMPORTS IN 1933, IN 1000 METRIC TONS

Breads	622.2
Cattle foods	1,467.6
Fruit, drinks, and sugar	62.1
Pulp and paper	100.9
Chemicals	358.4
Metal goods	281.1
Textile materials	19.2
Manufactured textiles	22.1
Mineral oils	588.4
Coal and coke	4,907.5

PERCENTAGE OF DANISH IMPORTS FROM VARIOUS COUNTRIES

United Kingdom	28.1
Germany	22.7
Holland, Belgium, and Luxemburg	7.1
Sweden	6.9
U.S.A.	6.1
U.S.S.R.	3.5
Other countries	25.6

PROPORTION OF DANISH EXPORTS TO IMPORTS FROM VARIOUS COUNTRIES

United Kingdom	2.2 : 1
Germany	1 : 2
Holland, Belgium, and Luxemburg	1 : 2
Sweden	1 : 1.5
U.S.A.	1 : 10
U.S.S.R.	1 : 6

CROPS IN 1933, IN 1000 METRIC TONS

Roots	23,810
Hay	1,920
Beet	1,760
Potatoes	1,327
Barley	958
Oats	926
Wheat	314

CONSUMPTION OF BUTTER AND MARGARINE

Annual consumption of margarine	20 kilogrammes per person
Annual consumption of butter	8 kilogrammes per person

A GEOGRAPHY OF EUROPE

COPENHAGEN

NOTEBOOK WORK: II

Turn the following note about Copenhagen into map form :

The North Sea entrance to the Baltic Sea is almost blocked by the Danish islands, and of the narrow straits between them only one, The Sound, is navigable for big vessels. On this Sound stands Copenhagen—'the merchant's haven'—at a point where in past days tolls were levied on Baltic shipping. The little island of Amager helps to shelter Copenhagen's harbour.

The cutting of the Kiel Canal has given the Baltic Sea a small 'side door'; but canal dues increase the running costs of cargo-boats, and most traffic still travels between the North Sea and the Baltic *via* The Sound. The importance of the canal is mainly strategic. Copenhagen is an *entrepôt*—a large-scale wholesale warehouse and redistributing centre—for products that the Baltic lands sell or buy.

Denmark's west coast is a line of dunes with sandy beaches, much surf, many bathing resorts, but few harbours; Eastern Denmark—*i.e.*, the Baltic side—is much more fertile, and actually more people live on Denmark's Baltic islands than on the Jutland Peninsula. Of the fertile islands Zealand, on which Copenhagen stands, is the largest. The east of the country is the centre of the dairying industry, the export trade of which is dealt with almost entirely by Copenhagen; Aarhus and Odense, the two next largest towns (populations of about 81,000 and 57,000, compared with Copenhagen's 771,000) are also on this eastern side. Esbjerg, on the west coast, is a fishing-port and ferry-port for Harwich.

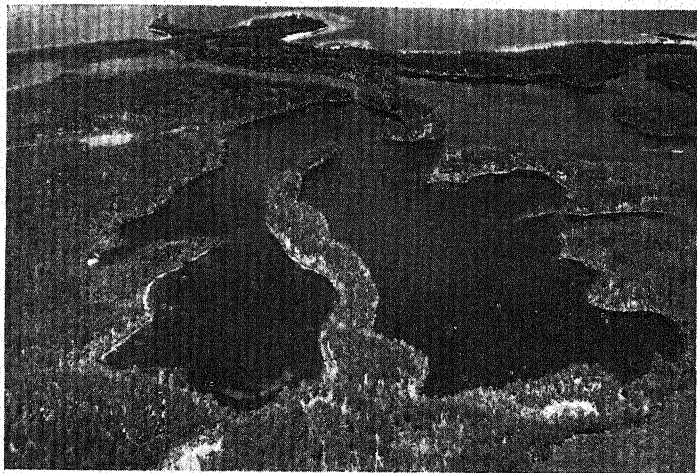
Factories in Copenhagen make textiles, boots and shoes, beer, and pottery, and the city has important shipyards.

FINLAND AND THE BALTIC STATES

The people of Finland and Estonia are akin and racially distinct from the Slavic Russians on their east and the Teutonic Swedes on their west; the Letts are mainly Teutonic, and the Lithuanians are akin to the Poles. All four of the new states belonged to Russia before the last war, and certain concessions in the way of self-government were allowed to Finland especially and to the others in much less degree. Because of their western site and their

FINLAND AND THE BALTIC STATES

trade, the Baltic states in pre-War days were more European than Russian. Thus it can be seen that there existed a racial and cultural boundary between Russia and her Baltic provinces long before they actually became independent republics. During the War they had a sad time: Russia, on the side of the Allies, soon collapsed into what



AN AERIAL VIEW IN FINLAND
Finland is a country of forests and lakes.
Photo E.N.A.

became revolutionary chaos, and German armies occupied the Baltic provinces, but not without much fighting and consequent destruction. Just when the states had reconciled themselves, not unwillingly in some cases, to becoming German 'colonies' or 'spheres of influence,' the Bolsheviks, who had formed a new Government in Russia, invaded the Baltic lands to retrieve what they considered to be their own territory. The Germans repulsed this attack with more fighting and damage, and slowly conditions became settled once more, when suddenly Germany

A GEOGRAPHY OF EUROPE

herself, the possessor of the Baltic states, sued for peace. It was a long time before the little independent German armies in these outposts were eventually recalled, and nobody knew quite what was happening there. Lithuania was invaded again by Russia, who, however, soon acknowledged the independence of the country; then, Poland, the child of a Peace Conference, seized Lithuania's chief town, Vilna. The League of Nations remonstrated; Lithuania, in retaliation, seized Memel: and that is the state of affairs in the country at present—bitter hostility to Poland for the Vilna episode. Estonia and Latvia gained their independence after the Russian Revolution: the old racial and cultural frontiers automatically became political boundaries. Russia, busy with other affairs, recognized the new states; the Powers of Western Europe hardly knew of their existence, but eventually, when they realized that the new little countries would form a useful barrier against an advancing Communism, recognition and help in various forms were granted.

Finland is structurally different from the other new republics, being part of the Shield—a tilted platform of old rock, scraped bare of soil in many places, and scooped into lake-filled hollows by glacial action. Almost the whole country is either lake or pine-forest, and the people live in much the same way as those of the Shield opposite, in Sweden. But whereas in the latter country there is a complementary agricultural region in the south, Finland is *all* Shield and almost all forest: five-sixths of Finland's exports are timber and timber products, and much food has to be imported in exchange. Nevertheless, in forest clearings dairying is important and becoming more so, while hardy crops like rye and oats are grown. Fishing in rivers, lakes, and sea provides further food. Houses are of timber, except in the capital, Helsinki (Helsingfors); fuel is timber; but electric power in homes and sawmills is general. The common diet is humble but wholesome—rye-bread, plenty of butter, berries, fish and other

FINLAND AND THE BALTIC STATES

meat, together with imported sugar, coffee, and fruits. Cottage crafts like the weaving of linen on hand-loom are general.

The other three republics, outside the Shield, are forested lowlands with crops of potatoes and flax in the clearings; dairying is widespread, but breadstuffs and manufactures have to be imported in exchange for butter, bacon, and flax.

The cares of this world soon encompass the Lithuanian child. He or she starts work at a very tender age as custodian of a couple of cows or a score of geese. All around circles the forest of pine, fir, birch, and oak, with a thick undergrowth of berries. Each village is a little community in a forest clearing, and beyond the horizon, and beyond that again, there is ever the same alternation of forest and clearing. The Niemen is the father and the forest is the mother of the Lithuanian people. . . . Man is still breaking the Wild, still held in check by the forest and the marsh, still a child of the wilderness.¹

TOWNS

The east coast of the Baltic Sea has two big gulfs and one shallow *haff* (see p. 113): Helsinki (Helsingfors), Tallinn (Reval), Riga, and Memel all owe their sites to these openings. The first two of these towns, the capitals of Finland and Estonia respectively, are at opposite sides of the entrance to the Gulf of Finland, at the head of which is Leningrad—once, as St Petersburg, the capital of Russia; Riga, the capital of Latvia, is at the head of the Gulf of Riga; and Memel is at the narrow entrance to its *haff*. It is essential to realize first that the size and importance of these towns have nothing whatever to do with the present political boundaries, and that they are somewhat in the nature of square pegs in round holes. To-day all these towns, except perhaps Helsinki, have

¹ *Beyond the Baltic*, by A. MacCallum Scott (Butterworth).

A GEOGRAPHY OF EUROPE

had their natural hinterlands very much reduced. Tallinn and Riga were prosperous old Hansa ports, but declined, like all the Baltic Hanseatic towns, when Western Europe began to look oceanward for trade; a new prosperity did not arise until late last century, when by railway connexions these two ports were made the Baltic outlet for the rapidly developing Russian produce,



A PEASANT'S HOME IN ESTONIA

Photo E.N.A.

especially the wheat of the steppes. Riga was ice-free and soon outrivalled Tallinn, becoming eventually Russia's greatest port and the world's busiest timber port. To-day the new frontiers and the new policy in Russia have strangled this trade and made the railway connexions ineffective. Helsinki is modern and spacious, and monopolizes Finland's export trade in timber and dairy-stuffs and the imports of manufactures. Memel has been an unfortunate town, shut off from its true hinterland of the Niemen basin in pre-War days by the German-Russian frontier and to-day by the new boundaries of Lithuania and Poland. Liepaja (Libau) and Ventspils (Windau)

FINLAND AND THE BALTIC STATES

were pre-War Russian grain ports fed by new railways, but to-day the towns are small and unimportant.

THE BALTIC SEA

The Baltic Sea is shallow; it is situated in northern latitudes where the cool cloudiness prevents any rapid evaporation; numerous rivers, large and small, pour enormous quantities of water into the sea, which is consequently very fresh, freezes easily, and has a rapid overflow into the Kattegat through the narrow straits between the Danish islands.

The lands around the Baltic shores were the home of the Gothic races whose culture has so profoundly influenced Western civilization. In surroundings of pine-woods and lakes was born that democratic freedom which is now being threatened on every side. Here were bred peoples characterized mainly by enterprise and adaptability; they had to turn their hands to farming, fishing, hunting, sailing, and fighting; their lands were generous only by compulsion; the idle and the feckless perished. The Vikings were not mere plunderers; it is true that those who set out westward and southward were characterized by destructive raids, but other Vikings went east and south and built a great trade route from the Baltic to the Black Sea, exchanging their furs, amber, fish, and slaves for corn, wine, textiles, and metals. Eventually the great energy of this race spent itself, but not before they had imprinted on large areas of Europe their ideals of independence, freedom from restraint, liberty, and democracy. To-day Scandinavia and some countries of kindred peoples in the extreme west of Europe uphold these traditions, while eastward and southward great changes in governmental forms and in the whole notion of personal freedom are taking place.

Around the Baltic a great cycle of history has taken place: There were the old days of Viking control and

A GEOGRAPHY OF EUROPE

Viking trade, which slowly died to give way to a German control through the Hansa cities. With the discovery of America Western Europe acquired a new outlook, and Hansa prosperity declined. Then three Great Powers struggled for the mastery of the Baltic "Lake"; it became Swedish; Peter the Great almost succeeded in making it Russian. In the nineteenth century Germany rose to power, and at one stage towards the end of the last war Germany seemed to have control of the Baltic; but when these conquests were at their height her defeat occurred on other fronts. To-day, around the Baltic shores, the old races have re-emerged as independent peoples.

SECTION II

THE EUROPEAN PLAIN

RUSSIA IN EUROPE

U.S.S.R.

RUSSIA in Europe is not the whole of the Union of Socialist Soviet Republics, but only the comparatively small but very important western end of a huge territory that stretches from Eastern Europe right across Asia. To study European Russia and forget its natural continuation eastward is rather like studying Calcutta and forgetting the Ganges basin, or Hamburg and ignoring the Elbe, or New York and omitting its vast hinterland. The Five Year Plans in Russia include schemes for the whole Soviet territory, and are not concerned only, or even mainly, with the European end. Nevertheless, Russia in Europe is at present the 'business end' of the U.S.S.R. and as such deserves attention as a special region. But it must be remembered that the Ural Mountains are in no way a political boundary.

Out of the chaos of a revolution in the middle of the last war there rose in Russia a new state based on ideals wholly different from those of any other country in the world and especially contrary to the accepted structure of society in Western Europe. For various reasons some of the Powers of Western Europe interfered in Russia, but they achieved no success and had to escape from awkward predicaments as best they could; the new state, right or wrong, was established. Bad feelings on both sides were roused, and only slowly did the folly of deliberate misunderstanding and misrepresentation dawn on people, Russians and others. Gradually there came a happier

A GEOGRAPHY OF EUROPE

state of renewed, but not very friendly, relations, and Communism in Russia was accepted in the West. It is not for the geographer to state the rights and wrongs of this creed, but it is his task to study the surroundings in which the new state has grown, to find, if he can, some explanation and perhaps some hint as to the future.

NOTEBOOK WORK: 12

[To draw a map of Russia in Europe, begin by marking a dot for Moscow in the centre of the page; then see from an atlas how railways radiate from this centre, and note their directions and comparative lengths. These help to fix the relative positions of the White Sea, the Gulf of Finland and the Baltic Sea, the Warsaw 'Gap,' the Sea of Azov and the Black Sea, and the Caspian Sea.]

On a map of Russia mark the following: (*a*) the seas already named; (*b*) the rivers Volga, Ural, Dnieper, Dniester, South Dvina, Neva, North Dvina, and Pechora; (*c*) Lakes Ladoga and Onega; (*d*) the Ural Mountains, the Caucasus, and the central Valdai Hills; and (*e*) the land below sea-level around the Caspian Sea.

Make two measurements from the atlas across Russia—(*a*) from north to south (reckoning 1 degree of latitude as 70 miles), and (*b*) from east to west along lat. 55° N. (reckoning 1 degree of longitude as 40 miles).

Natural Regions

Russia in Europe is one huge plain about 1500 miles square; in all this area there are no hills higher than the Downs of Southern England. How is this vast lowland to be studied? In what parts? What shall be the natural regions of an area that is all one physical region? Surroundings in Russia are not all alike; there are places as contrasted as the Arctic shorelands, the Crimean vineyards, the pine-forests, the treeless steppes, etc., which all merit attention as 'regions.' No other map is more

RUSSIA IN EUROPE

helpful than the natural vegetation map in fixing the divisions in which Russia may be studied. It marks five distinctive regions: (a) the tundra, (b) the coniferous forests, (c) the deciduous or 'mixed' forests, (d) the steppes, and (e) the desert—five contrasted vegetational types which, with the addition of two frontier mountain regions (the Caucasus and the Urals) will form the basis of the following regional survey. At the same time the unity of the plain must be borne in mind, with its "tyranny of size, . . . tyranny of relief, . . . tyranny of climatic control, . . . a land in which political and priestly tyranny is an unavoidable incident, . . . where relief and climate are profoundly adverse to independence, initiative, and individuality." ¹

NOTEBOOK WORK: 13

(i) On a map of Russia mark the five main vegetation belts. With the help of the information given at pp. 369, 370, write notes to explain the limits of these belts.

(ii) Graph the following climate figures, all on the same scale, to illustrate your previous map and notes:

—	—	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
Archangel	{ Temp. { Rain.	8 0.9	9 0.7	18 0.8	30 0.7	41 1.2	53 1.8	60 2.4	56 2.4	46 2.2	34 1.6	22 1.2	12 0.9
Leningrad	{ Temp. { Rain.	18 1.0	18 0.9	24 0.9	36 1.0	48 1.6	59 2.0	63 2.5	60 2.8	51 2.1	41 1.8	30 1.4	22 1.2
Moscow	{ Temp. { Rain.	12 1.1	15 0.9	24 1.2	38 1.5	53 1.9	62 2.0	66 2.8	63 2.9	52 2.2	40 1.4	28 1.6	17 1.5
Odessa	{ Temp. { Rain.	25 0.9	28 0.7	35 1.1	48 1.1	59 1.3	68 2.3	73 2.1	71 1.2	62 1.4	52 1.1	41 1.6	31 1.3
Astrakhan	{ Temp. { Rain.	19 0.5	21 0.3	32 0.4	48 0.5	64 0.7	73 0.7	77 0.5	74 0.5	63 0.5	50 0.4	37 0.4	26 0.5

In each of the following descriptions of the natural regions of Russia there is given a general geographic

¹ *Europe*, by L. W. Lyde (Black).

A GEOGRAPHY OF EUROPE

account which includes such developments as had taken place in pre-Revolution days, and then follows a summary of the extraordinary developments that are taking place to-day or are planned to occur in the near future according to the second of the Five Year Plans. From a geographical point of view these Plans are interesting in that they represent an attempt at controlled development as distinct from the haphazard development that has fitfully opened up other new lands. In an economic sense Russia is a new land, and the planned economy for the steppes, the forests, the mountains, the fisheries, etc., is well worth comparing with the unplanned growth of production in similar regions of, for example, Canada or the United States. The new rulers in Russia have sought the advice of experts in every subject to find out how each region in the country can be exploited to the best advantage. The Government suddenly found itself in absolute ownership of vast potential wealth which it was determined not to squander; and the Five Year Plans are the united schemes of many specialists to use every available resource for what they consider to be the maximum ultimate benefit of everybody in the land. The making of the Plans must have been an excellent geographical exercise. Here was a great belt of pine-forest. What should be done with it? What had other peoples done with their forests? What lessons were to be learned from their efforts? What better developments did scientists suggest? What would form the ideal development from every aspect? That should be incorporated in a great plan. If Canada could start her prairie farms all anew, or England her coal-mines, or Germany her beet factories, or the United States her cotton-fields, what different methods would they employ? What errors could be averted? Suggestions like these should become part of a great plan in Russia. From that point of view the study of Russia is definitely geographical, and it is that aspect that will receive attention in this book.

RUSSIA IN EUROPE

THE STEPPES

The southern part of Russia is considered first because it is easily the most important area; it is probably the most fertile belt of prairie-land in the world, it contains Russia's richest coalfield, and it has by far the densest population of any of the natural regions of the U.S.S.R.

Steppes are treeless plains, green with grass in late spring and early summer, brown with natural hay in late summer, and white with powdery snow in winter. Such surroundings are not particularly attractive except perhaps to people with horses, cattle, sheep, and goats, but even to herdsmen and shepherds the steppes have grievous disadvantages. The winter cold is very severe, and that means that people and animals must be housed for that season. But a land with no timber offers few facilities for house-building; tents of skins do not afford sufficient protection against intense cold; and turf, cut into 'bricks,' can be built into incurving walls to form a domed hut which is warm in winter but very limited in size and so not of much use as a stable. Even the pleasanter summer is marred by drought, plagues of locusts, and dust-storms. The choicer places for settlement are on river-banks where the water-supply is more certain; but anywhere and everywhere on these open plains is defenceless, and for this reason people tend to congregate into tribes, the village becomes more important than the separate farm, and the adaptability of the individual fending for himself gives place to reliance on co-operative effort.

The history of Southern Russia illustrates the mode of life demanded by steppe conditions. From earliest times restless hordes have crossed the plains from the east, driven westward by the characteristics of the steppes or by other nomads in their rear. Scythians, Goths, Huns, and Khazars in their turn passed westward along the great grassy highway; in intervals between successive processions certain forest peoples farther north sought the

A GEOGRAPHY OF EUROPE

fringes of the open grasslands, but always to be driven back again to the woodland refuges by further invasions. The Tartars finally completed the desolation of the area.

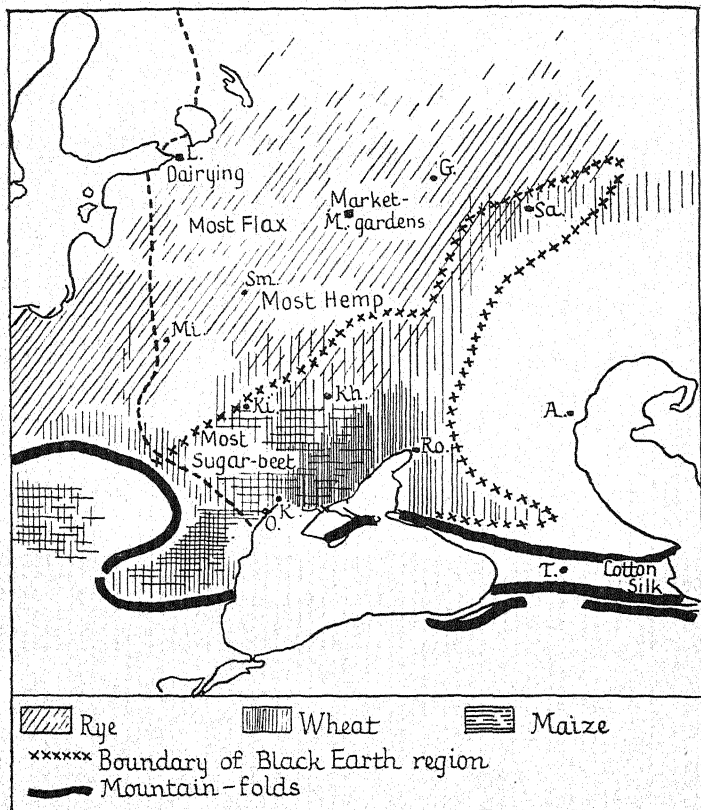


FIG. 5. DISTRIBUTION OF SOME OF THE MAIN RUSSIAN CROPS

Their power eventually waned—for they were robbers, great settlers—and again the forest peoples emerged. But of great significance that these early colonizers became the backbone—bold horsemen, herdsmen in time of plenty,

RUSSIA IN EUROPE

but raiders like the Tartars when drought destroyed their pastures. Only very slowly did other Russians penetrate the Cossack domains, and when they did it was with the help of some powerful war-lord, who eventually became a landowner with an army of serfs paying him tribute for his protection. During the nineteenth century the



TRACTORS IN THE CENTRAL BLACK EARTH REGION

Notice the standard pattern of the machines, made in a new Russian factory run on American methods of large-scale production. In Russia an attempt is being made to apply to agriculture methods similar to those of efficient factory-organization.

Photo Planet News, Ltd.

steppes were gradually settled, and the turbulent Cossacks became rather independent cavalry units in the Russian Army. But many characteristics of original steppe settlements remained, and still remain, in a somewhat modified form, even to-day—the big landowner, the village unit, the lack of initiative, the power of the village committee or soviet, housing difficulties, migrations due to failures of crops, lack of roads, etc.

By 1914 the Russian steppes were partially developed :

A GEOGRAPHY OF EUROPE

serfdom had been abolished only in the latter half of the nineteenth century, and peasant-farmers, working and living almost as tribal units, were cultivating the more favoured areas in a poor, primitive fashion. Hardly any of these people could read or write; all were intensely superstitious; all obeyed the rulings of their *soviets* and *artels*, a form of guild; all were likable folk, and not the drunken hooligans so often depicted. The soil was rich, but yields were poor: sometimes in good seasons there was wheat for export; sometimes there was famine. It is hard to imagine a greater contrast in the development of two similar regions than between the bustling, mechanized farms of the North American prairies and the pre-War peasant holdings of South Russia. Whatever the crop—wheat, barley, oats, beet, hemp, sunflower (grown for the oil in the seed), etc.—Russia compared badly with progressive lands of the Northern Hemisphere in methods, yield, transport, trade, and other aspects of production. Whereas Germany was intensely scientific, France thrifty, the British Isles specializing in cattle-breeding, Denmark co-operating, and America mechanized, in Russia farming on the bountiful steppe was conservative and lethargic; and yet it was the richest part of the country.

Before describing modern developments it must be made clear that all steppe is not alike and that the famous Black Earth belt does not coincide with the boundaries of the steppe (Fig. 5). Black Earth is deep, rich soil formed of decayed vegetable matter—accumulations of dead grasses that have perished in centuries of battle with droughts which have conquered fitfully, slowly, but surely.

Other areas of the steppes are covered with loess, which is a wind-formed dust-deposit and can therefore have been formed only in arid conditions; it is thought to be the deposited loads of the winds blowing over the terminal moraines of the great ice-sheet that once covered much of Northern Europe. Loess is fertile because the mineral salts it contains have never been leached by heavy rains

RUSSIA IN EUROPE

(see p. 370). The land around the mouth of the river Dnieper is sandy, and the Caspian borders have salty clays. Then, again, the northern steppes have scattered trees that form a kind of park-land between the true grassy steppe and the belt of deciduous forests, while on eastern steppes the grass deteriorates to the scrub forms of desert margins. Rainfall in South Russia varies in two directions; from west to east the decrease is fairly regular, but from north to south, between the forest and the Black Sea, there is at first a rapid decrease and then an increase as the coastal margins are approached. The boon of large rivers in parched steppe-land is inestimable; they water the land, they cool the hot summer air, they form water-routes in summer and ready-made 'streets' of ice in winter.

South Russia To-day

This is the busiest and most densely peopled part of all the U.S.S.R., but radical changes have taken place in agriculture, stock-raising, and industry. First, and most surprising in one respect, is the definite effort at decentralization—*i.e.*, at preventing a natural drift of population to the south and at diverting energy to other undeveloped areas like the Siberian steppes. Secondly, there is the aim of industrialization, so that to-day, instead of Russia being predominantly agricultural, actually 60 per cent. of the revenue comes from industrial projects and 22 per cent. from farming—a sharp reversal of pre-War conditions.

It is on the steppes that the schemes for collective farms and the great State farms have been initiated. Russian agriculture is now on the largest scale of any country in the world. This has been accomplished by the American method of mechanization, Russia to-day taking first place in production of farm-machinery. At Rostov is "The Giant," a 500,000-acre State farm; at Odessa is the world's largest elevator; at Kharkov, Gorki (Nijni-Novgorod), Stalingrad, Voronezh, Odessa, and Kiev are

A GEOGRAPHY OF EUROPE

machine-shops producing and repairing tractors, ploughs, self-binders, threshing-machines, etc.; at Dnieproh is one of the largest hydro-electric plants in the world, and others are being erected along the Volga and the northern Caucasus. The main purpose of these new farming methods is to provide food for the Russians: a hungry state is apt to be an angry state, and the new rulers in Russia are determined to satisfy their own peoples first. The export of surplus wheat (when there is a surplus; famines still occur) is much less than people are led to expect: for instance, in 1933 exports from the U.S.S.R. under the heading of agricultural foodstuffs (excluding animal products) were only 14 per cent. of the total value, while the exports of wheat to the United Kingdom in 1933 were less than 8 per cent. of the total value of all exports to the United Kingdom. The methods of production and the yields of all crops—wheat, oats, barley, maize, beans, and sunflower—are being improved very quickly. The employment of modern farm machinery and the scientific use of chemical manures derived as by-product from new iron-works. Nevertheless, in 1932 the yield of wheat per acre in the U.S.S.R. (*i.e.*, including Stargic; wheat-lands) was only half that of Canada, only two-thirds that of the United States, Australia, or Argentina, and less than a quarter of the intensely cultivated famous Belgium or Holland. Of course, the extensive backward farming methods of producing wheat in new lands rich soil give yields comparable to those of the small holdings of thriftily managed in old lands where farming little with even so the Russian yield is ridiculously low, but surely the fertility of the land and the modern methods available. The fault lies with the inexperienced peasants, and the Russian Government, realizing the uneconomic nature of the situation, is sparing no pains to train the countryfolk, young and old, to be machine-minded.

Lack of animal manure is always a serious handicap to large-scale agriculture, and the deficiency can be put right

RUSSIA IN EUROPE

only by 'mixing' the type of farming; but this mixed farming, so characteristic of the older lands of Western Europe, necessitates smaller holdings and careful, intelligent management, factors which breed a spirit of independence and pride that runs counter to some of the new Russian ideals of behaviour. So it can be seen that the drastic alterations in the economy of Russian agriculture are not being carried through without trouble: giant farms tend to be unwieldy; peasants misuse expensive machines; little farms develop thrift; and so on. The Russians admit that stock-farming, dairying, and poultry-farming will have to receive very special attention and a modification of the methods applied to cereals. But troubles, big and little, are overshadowed by keenness for the furtherance of the great Plans, because it is generally believed by the mass of the people that everything will ultimately right itself for the betterment of all.

The differences in the climate and fertility of the steppes already noted are reflected in the types of farming and the stages of development of the land. Towards the arid east ranching occurs, this area corresponding to the semi-arid western plains of North America. In the rainier west, where the most desirable land with least risk of drought occurs, the farming is most 'mixed,' because the land has been developed for the longest time; this area corresponds to parts of Manitoba, for example, where the specialization in wheat is being rapidly replaced by variety in crops. Between arid east and richest west is a region in the middle stage of development, where some ranching still occurs but where extensive wheat-farming is most general; this area corresponds to Saskatchewan, for example, or to the central plains of North America in general in their early days of specialization in wheat. All new lands have gone or are going through these stages of development—the ranching of empty lands, the machine-farming when population is scanty, and the more 'mixed' farming as more and more people are

A GEOGRAPHY OF EUROPE

attracted to the lands by the successes of the pioneers. When mixed farming is well developed the lands may be said to be growing old. How the Russian Plans will be adapted to this cycle of development remains to be seen in the not distant future.

Industry

It is not easy to realize at first the significance of saying that the Donetz basin is a very rich coalfield with iron ores close by. Fig. 6 shows the positions of these minerals. Think what effect there would have been upon the development of the North American prairies if Appalachian coal, Lake Superior ore, and Pittsburg's furnaces had all been actually on the prairies themselves. Or, to put the same supposition in another form, imagine the advantage if the prairies could be transferred to an ocean coast on which coal and iron were found in abundance. The Russian steppes have such facilities; they reach an open sea-coast, linked without physical barriers to the Atlantic Ocean, and then close to this coast and in the central region of the fertile farm-land there occur coal and iron, comparable in quantity and quality to those of the Ruhr and Lorraine. In pre-War days the Donetz coalfield and the ores of iron and manganese at Krivoi Rog were important; to-day, when Russia has suddenly plunged into industrialization and mechanization, this southern coalfield has become almost the key-district on which the new developments rely. The Donetz Basin produces 70 per cent. of Russia's coal, large new iron- and steel-works have been built, and old blast-furnaces have been remodelled with the help of German, American, and British engineers. The steel produced here is the raw material for the machine-shops of Gorki, Kiev, etc., the railway-works at Kharkov and Lugansk, and for the machinery in the flour-mills, tobacco-factories, sugar-refineries, and other works associated with the produce

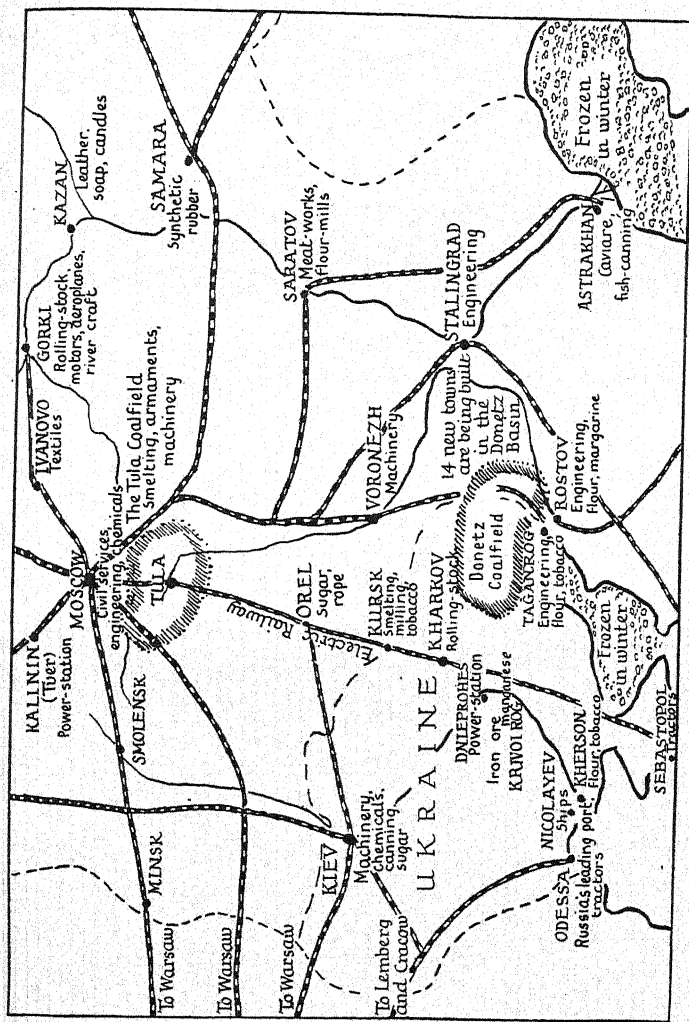


FIG. 6. INDUSTRIAL DEVELOPMENTS IN SOUTH RUSSIA

A GEOGRAPHY OF EUROPE

of a rich agricultural region. But decentralization is at work here too; the opening of new coalfields in Siberia, the Ural region, and the Moscow area, and the scientific use of petroleum, peat-fuel, and electricity are all intended to lessen overwhelming dependence on one main coal-field and to encourage a more even distribution of population.

Transport is a big problem not only on the steppe-lands; but throughout the U.S.S.R., and schemes for its improvement in the south include plans for more railways, more roads to take heavy motor-traffic, the electrification of branch lines, the better use of navigable waterways, and the development of air transport.

Towns

The early troubled history of the steppe-lands did not favour the growth of towns; the oldest settlements grew not on the open prairie used by the eastern invaders, but at defensible sites on its borders. The great east-west natural route along the steppe never became a commercial highway, partly because of warfare, partly because the country favours nomadism, but mainly because the route links steppe with steppe and thus does not favour the exchange of commodities produced in different regions. But a commercial 'street' did develop in very early days across Russia between the Baltic and Black Seas, or, it is better to say, between the Baltic Sea and Constantinople (Byzantium) (Fig. 7). This was the Norsemen's route that has already been mentioned (p. 59). These eastern Norsemen were not ocean navigators, like their kinsmen to the west, but backwoodsmen used to canoes, forests, portages, and trapping; and one particular route encouraged their penetration into Russia. This led up the Gulf of Finland, up the river Neva, through Lake Ladoga, up the river Volkov (where they founded Novgorod, the 'Great City'), and up the river Lovat. Here a short portage, through

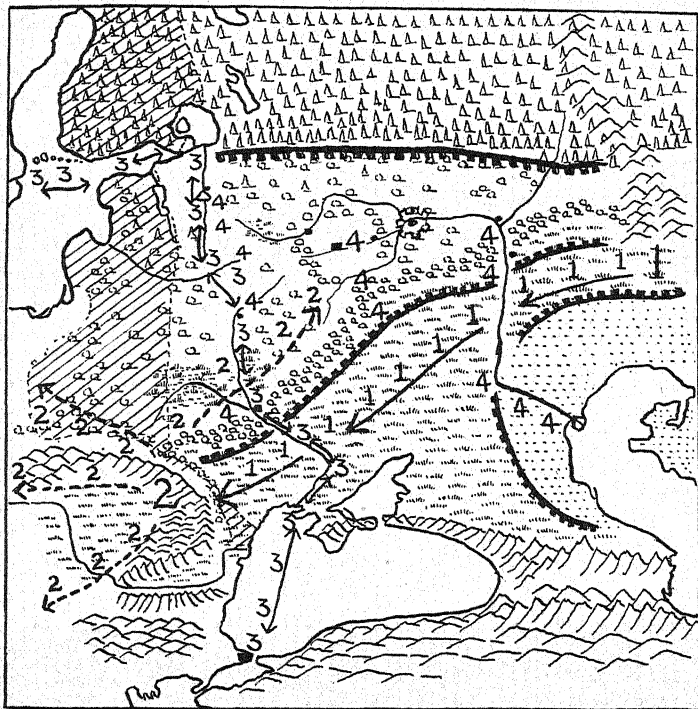


FIG. 7. THE GROWTH OF RUSSIA

This map shows the open, grassy highway of the steppes, and three ramparts that have limited movement—(i) the desert rampart, (ii) the forest rampart north of the steppes, and (iii) the rampart of cold in the north.

The numbers and arrows refer to movements of people, as follows:

- 1, the line of constant invasion from the east.
- 2 is probably the original settlement of the Slavs, an Eastern people.
- 3, the dispersal of the Slavs to become Russians, Poles, Czechs, Yugoslavs.
- 3, the Viking commercial highway.
- 4, Tartar conquests: the Tartars dominated Russia from 1224 to 1480.

The outward movement of the Russian Slavs started from Moscow. It extended in the fifteenth century to the Baltic, in the sixteenth to Kazan and Astrakhan (Tartar strongholds) and to the White Sea, in the seventeenth to the Black Sea and as far eastward as the Pacific, in the eighteenth to Poland, and in the nineteenth to Rumania. The shading shows territory that Russia has lost since the last war.

A GEOGRAPHY OF EUROPE

pine-woods with which the Norsemen were familiar, brought them to the upper Dvina, which they ascended, because there were rapids downstream. Another short portage gave on to the river Dnieper, almost where Smolensk is now situated, and down this great river their small boats came. Soon the forests were left behind, and open steppes stretched on either side of the stream; at the junction of forest and steppe rose Kiev, the original capital of an early Russia. Farther downstream sites are less defensible and rapids occur (used now at Dnieprohes for generating electricity). But the old Norse route continued to the mouth of the Dnieper and thence to Constantinople, where the Vikings exchanged their furs for textiles or swords, or became paid troops to guard the city's northern frontier from the horsemen of the steppes. Kiev was thus a half-way house along this ancient route; its people received their Christianity from Constantinople, and the city soon grew into an important missionary and trading centre. But this early nucleus of Russia was doomed; it was too near the steppes, and the Tartars sacked the town. Its inhabitants fled, and some of them founded what was to be a new Russia in the forest refuge of Moscow. Much later, when the Tartar menace was waning, Kiev and its fertile surroundings again attracted people, the Little Russians (as distinct from the Great Russians of Moscow), and again Kiev became a capital. But Moscow was all-powerful, and Little Russia was added to the Tsar's dominions. To-day, after a European war, a Russian revolution, and still more anti-Soviet wars, especially on the south-western steppe, Kiev is again a capital, now of the Ukraine—an independent Soviet republic but within the Union.

Ukraine means 'frontier'; the political boundary is marked in Fig. 6, and it will be seen that the republic includes the best of the steppe and much of the Black Earth, so that its importance to the whole Union can well be realized. Without the Ukraine Russia would lose not

RUSSIA IN EUROPE

only the best of her larder but a large part of her best-filled coal-cellar in the Donetsk basin.

NOTEBOOK WORK: 14

- (i) Explain the limits of the wheat-lands shown in Fig. 5.
- (ii) Draw a map to show the site and importance of Kiev. (Its industries to-day include the manufacture of farm-machinery, sugar-refining, and fruit-canning—Little Russia having orchards of apples, plums, and cherries.)
- (iii) Kharkov is the largest town of the Ukraine. Draw two maps side by side to show the products around Kharkov and the products around either Chicago or St Louis. Write a note comparing the Russian and the American town.
- (iv) Odessa (a comparatively modern town, founded in 1794) is the greatest grain-port of the U.S.S.R. Compare its site with that of Riga in pre-War days, when the latter was a busy Russian port.

[The towns of the eastern steppes are described at p. 88, and other Russian Black Sea ports at pp. 79, 80.]

THE CAUCASUS

The area included in this region is not only the high mountain ranges between the Black Sea and the Caspian Sea, but their continuation westward along the north-eastern coast of the Black Sea into the southern half of the Crimean peninsula; in addition the lowlands immediately on the north flank of these mountains will be considered, so that the two provinces of Transcaucasia and Ciscaucasia belong to this section.

The Caucasus region contains a strange mixture of peoples—Russians, Turks, Kurds, Armenians, Georgians, and others—who are for the most part refugees driven to the mountain fastnesses by stronger nations who have seized the surrounding lowlands. Politically the area is somewhat a confusion of republics, Armenia, Georgia, and Azerbaijan constituting the Transcaucasian Federal Soviet Republic, with a group of autonomous republics

A GEOGRAPHY OF EUROPE

or regions (of which Daghestan, on the Caspian shores, is the largest) along the northern flank of the mountains.

Although the surroundings are semi-desert or desert, the Caucasus Mountains themselves form a distinct climatic region with heavy rains due to cyclones that form



A CAMPING SCENE IN THE CAUCASUS

This picture illustrates an important aspect of the geography of a land—the question not of industry, but of relief from industry. In Russia play as well as work is organized by the State.

Photo Planet News, Ltd.

over the Black Sea. Slopes are densely forested, and valley bottoms tend to be swampy; in summer these enclosed lowlands are hot and steamy, and such crops as rice, cotton, and sugar-cane are cultivated; in winter the weather is raw, but high on the mountains, where there is much sunshine amid the snow, new health- and pleasure-resorts have been established.

In pre-War Russia the oilfield of the Caucasus was famous, Baku and Batum both being busy oil-ports. In

RUSSIA IN EUROPE

those days, however, the petrol engine was not so important as it is now, and, in addition, backward Russia could not compete successfully as an oil-producing country with the progressive United States. Apart from this mineral wealth Caucasia was a neglected region, and such farming as there was, in an area of mixed peoples, mixed religions, constant feuds, raids, and persecutions, was most primitive peasant-cultivation.

The Caucasus To-day

Russia is now the world's second producer of petroleum, the chief area of development being at Grozny, whence a new pipe-line goes to Tuapse, on the Black Sea. The oilfields are being surveyed scientifically, and it seems that Caucasus oil has only just been tapped, and that supplies will continue to increase for a long time. It is probable that the oilfields of the United States have reached the peak of production. Baku, the capital of Azerbaijan and the largest port on the Caspian Sea, has a population of 700,000, including the new settlements of the neighbouring oilfield; a pipe-line connects Batum, on the Black Sea, with Baku.

Agriculture is being improved rapidly. Caucasia is the only part of European Russia that can grow cotton, a crop which is being increased to supply the Moscow mills and new local mills. The steppes north of the Caucasus grow much wheat, sugar-beet, and soya-beans on collective farms. Tiflis, the capital of Georgia and the central town of Transcaucasia, has large cotton- and silk-mills, and is a centre of the U.S.S.R. film industry, in which connexion it is worth comparing as regards site (mountain, forest, and desert) and climate (sunshine especially) with Los Angeles. Other developments in the Tiflis area include big hydro-electric schemes (two powerful stations are already working, and the whole of the Batum oilfield works have been electrified) and the extraction of ores of

A GEOGRAPHY OF EUROPE

iron, manganese (deposits estimated at 250 million tons), copper, and aluminium: new iron-works are intended to cater primarily for the needs in pipes, derricks, pumps, etc., at the oilfields. It is also intended that the fruits and flowers of Caucasia shall be the basis of a trade similar to that of the French Riviera.

Along the north-east coast of the Black Sea are many health- and pleasure-resorts for Russia's workers. The Southern Crimea is a 'Mediterranean' land of vines, olives, pomegranates, laurels, cedars, and cypresses, a land of December violets and January roses, a land of a summer-time that lasts from April to September, a land where winter is very mild, a land for invalids, a land for tourists among the mountains, gorges, cliffs, and coves. Here were the palaces of the old Russian aristocracy; to-day the same buildings are rest-houses, hospitals, and hotels. The capital of the Peninsula is Simferopol, and Sebastopol is a busy port linked by steamer services mainly to other Black Sea ports.

DECIDUOUS FORESTS: THE MOSCOW REGION

The primitive surroundings of this region were forests with brambly undergrowth, glades, and swamps—conditions attractive for defence but not very bountiful. Early life must have been very much after the Robin Hood pattern—seemingly romantic now, but actually a tough school of existence. Population clustered for protection round the strongholds of the various champions, and the beginning of the history of a real Russia is largely an account of the alliances or conquests of the different ^vends or clans. The early strategic importance of the ^erice, ^wcow region and its later ecclesiastical supremacy ^{weat}ted a dense population to an area that in economic ^{much}ts had little advantage to offer. Forests were par- ^{resorts}leared, and peasants supplied farm-produce to the famous, ^{In p}nd their courts.

RUSSIA IN EUROPE

Moscow was not without rivals as a capital or as a fortress in the forest-belt. The city of Nijni-Novgorod (now Gorki) was once not only the capital but the saviour of Russia: at a time when Novgorod—which was the old northern Viking capital on the Baltic-Black Sea route—had been captured by Lithuanians, when Kiev and, later, even Moscow were held by Tartars, Nijni-Novgorod, a river-junction fortress, organized the campaigns that were to free this heart of Russia from foreign rule. Although Moscow soon regained supremacy on account of its more central site, Nijni-Novgorod never lost its importance, especially as a trading centre where great fairs were and, to a less extent, still are a feature.

The fair [at Nijni-Novgorod] will sadly disappoint those who expect to see at every turn pagans from Northern Siberia, Chinese Buddhists, Tartars from Samarkand or Bokhara. Now that the railways thread Asia, though the actual turnover has not decreased, much of the former colour is lost. That is seen better in the fairs at places like Orenburg.¹

In pre-War Russia the peasants of the forest-belt continued as they had done for centuries, with primitive methods and poor yields; but the coal of Tula had caused an industrial area to grow, with iron- and steel-works and clothing factories. Nevertheless, Russia was importing much manufactured produce from the industrialized lands of Western Europe. Moscow was essentially a governmental centre, civic and ecclesiastic.

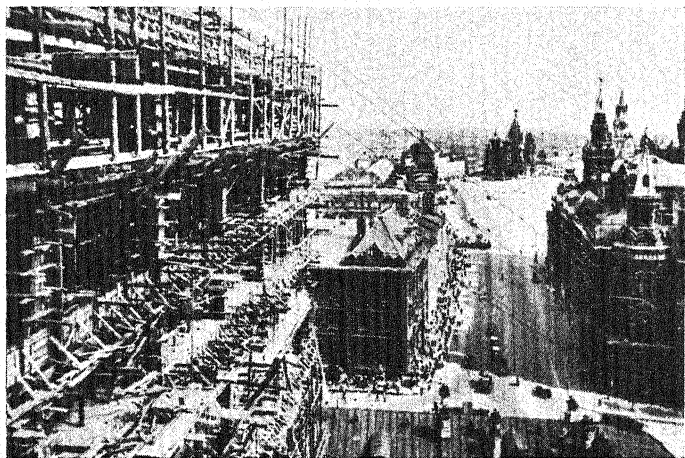
The Moscow Ring To-day

To-day Moscow is the capital of the U.S.S.R., but it is seriously suggested that a new capital should be built—one central not only for the European area, but for the whole Soviet territory, and well removed from

¹ *Provincial Russia*, by H. Stewart and F. de Haenen.

A GEOGRAPHY OF EUROPE

possible interference by the West. Moscow is still predominantly governmental, but big developments have occurred in the neighbourhood. Electric stations are working at Kalinin (Tver) (using peat fuel), Ivanovo, and Gorki: Ivanovo is a great clothing centre; Gorki makes tractors, chemicals, paper, aeroplanes, and river-steamers.



MOSCOW, VERY OLD AND VERY NEW

Part of the drastic reconstruction of an ancient capital to suit the extraordinary developments of to-day is shown in this picture.

Photo Planet News, Ltd.

The output of the Tula coalfield has been increased, its iron-works and by-products plant modernized, and its arms factories enlarged. Moscow itself has engineering, rubber, and chemical works, and there are plans to further the production of luxury commodities like wireless-sets, gramophones, pianos, fashionable clothes, etc., goods such as are typical of other large capitals.

An interesting suggestion is that the whole of this industrial nucleus should be decentralized, so that in future factories will work actually at the supply of raw

RUSSIA IN EUROPE

material. For instance, it is proposed that cotton should not be brought all the way from Turkestan to Ivanovo for manufacture just because this town is near a coalfield, but that cotton factories should be on the cotton-fields and use such power as is locally available. Modern science gives much more choice in this respect than in the days of the Industrial Revolution, when steam, from coal, was the only power suggested for large-scale manufacture.

The farm-land of the Moscow region has been 'collectivized' also, but not on the same huge scale as the steppes, because the produce consists mainly of dairy-stuffs and vegetables for Moscow's 'Covent Garden,' both of which commodities are essentially products for small farms rather than large.

The U.S.S.R. depends almost wholly on land communications, and the capital must be the centre of the web of railways. Transport is a serious problem in the administration from Moscow: many local lines have already been electrified; long-distance lines are being improved, but slowly; air transport is developing rapidly, with Moscow as the chief air-port; and river transport is being modernized to help to relieve the congestion of heavy freight.

NOTEBOOK WORK: 15

(i) Draw a map of the Moscow 'ring' of towns. Show the radiating railways and name their destinations. Show also the radiating river-system.

(ii) Write a note on the navigability of Russian rivers, from the points of view of the relief, rainfall, and temperature of their basins.

(iii) Draw a map of one other capital city that has radiating railways. (In the atlas see Berlin, Paris, Warsaw, Delhi, etc.)

White Russia

White Russia, the smallest of the European Socialist republics in the Union, is an area in the extreme west of

A GEOGRAPHY OF EUROPE

the deciduous forest-belt, bordering Poland. From most points of view it is a poor, backward region, partly for historical and partly for physical reasons. White Russia became part of the Russian Empire only at the end of the eighteenth century, previous to which time it was a troubled borderland sometimes belonging to a vigorous Lithuania, sometimes to Poland, sometimes to both combined, but developed by neither and often deliberately neglected.

In the upper Pripet basin the woods are everywhere full of countless little channels which creep through a wilderness of sedge. Along the right bank of the Pripet rises above the level, and is fairly thickly populated. Elsewhere extends a great, intricate network of streams with endless fields of water-plants and woods. . . . In the drier parts the earth is carpeted with meadow saffron and asphodel; but over the bogs vapours hang for ever, and among the reeds in autumn there is no fly, no mosquito, nor living soul, nor sound save the rustle of dry stalks. No scene is more characteristic of the inhabited places than the infinitely melancholy picture, often witnessed from the train itself, of a grey-headed peasant cutting reeds, standing up to his waist in water.¹

To-day five-sixths of the population are village peasants, only one-sixth living in towns. Thanks to reclamation schemes, 30 per cent. of the land is now cultivated, of which about one-half is collectivized. Great attention is being paid here to technical education, the number of industrial employees having more than doubled in four years. The capital of the republic is Minsk.

THE CONIFEROUS FORESTS.

The general geography of a coniferous-forest region has already been described in dealing with Sweden. The pine-forest does not make a genial home, partly because

¹ *Provincial Russia*, by H. Stewart and F. de Haenen.

RUSSIA IN EUROPE

it is forest, and partly because of the harsh climate: it is a land of few people—trappers, lumberjacks, and, in forest clearings, peasants growing crops of hardy rye, tough flax, and the humble potato. Yet in this cold forest-belt was the capital of Tsarist Russia—St Petersburg, now Leningrad. In many ways it is a freakish city, comparable to Canberra, New Delhi, or Salt Lake City in its artificial growth. St Petersburg was deliberately founded by Peter the Great in the seventeenth century on most unattractive marshland round the river Neva, but at the head of a most attractive gulf. This artificial start had both advantages and disadvantages when the spoon-fed baby city began to grow. It became a beautiful child, but not robust: the swamps were turned into a planned canal system, streets were an orderly arrangement of boulevards, sites for parks and palaces were tastefully reserved; but floods, a not too happy climate, and an unpromising hinterland offset many of the advantages of organized planning. Peter the Great's idea in choosing this site was to form a connexion with Western Europe, to obtain a share of and perhaps control of the Baltic 'lake,' and to combat the isolation which was the natural result of the physical setting of his country.

Leningrad To-day

To-day the capital of the U.S.S.R. is Moscow; Leningrad is much too unfavourably situated as a governmental centre. Instead it has become an educational centre, a vast technical college training Soviet citizens in modern industrial methods. It is no longer the busy commercial front door that it used to be, but a cultural door through which Western ideas are admitted to be adapted to the working of a Communist state.

Leningrad is nevertheless still a busy timber-port with a new importance since Russia has lost all its territory on the Baltic Sea coast except for this small strip at the head

A GEOGRAPHY OF EUROPE

of the Gulf of Finland. The city has also pulp- and paper-mills, linen-mills, fish-canneries, and engineering shops that specialize in light goods like precision instruments.

In the forest area itself lumbering has been modernized by the introduction of motor saws, tractors, and scientific forestry-control. The production of flax and potatoes is supervised to improve quantity and quality, and dairying is developing quickly (*cf.* Finland) to supply not only Leningrad but cities as far away as the Moscow Ring.

THE TUNDRA

In pre-Revolution days this area was of little economic importance. The growth of St Petersburg and Russia's acquisition of a Baltic coastline diverted the once-prosperous fur- and timber-trade of Archangel to Russian ports nearer to the West European market and less handicapped by winter ice. (Archangel is free from ice only between May and October.) To-day, when Russia is almost excluded from the Baltic Sea, Archangel is acquiring a new importance as a timber-port and even as a grain-port, but Murmansk, a new ice-free port west of the White Sea, is being rapidly developed as a timber-exporting and fishing centre. Geological surveys in the Kola Peninsula have resulted in the starting of aluminium-works in the far north, and the coal of the river Pechora is being mined. The tundra, however, for lack of transport and population and for climatic reasons, remains the least promising of all the varied lands of the U.S.S.R.

THE BASIN OF THE VOLGA

Of the five main vegetation belts of Russia only the desert region has not yet been described, and it will now be considered in this section as a part of the Volga basin, a big area that includes parts of regions already explained

RUSSIA IN EUROPE

in general, but not with particular reference to their eastern limits, across which the river Volga flows.

The Volga, the longest and largest river in Europe, is navigable almost to its source in the Tver marshes. The basin can be divided into three sub-regions—(a) the Gorki area of fairly dense population and industrial



RUSSIAN PEASANTS AT SCHOOL

An ignorant and superstitious peasantry has been a great obstacle to the achievement of the plans of the Soviet Union. This photograph of workers at a sugar-beet factory learning to read and write is typical of the organized attempt by the State to educate all its people.

Photo Planet News, Ltd.

development, (b) the Middle Volga of steppe-land, and (c) the lower Volga of desert and scanty population. Throughout the long course the industrial regions are mere patches compared with the vast tracts of agricultural land in varied stages of development.

The Gorki area has already been described (pp. 81, 82);

A GEOGRAPHY OF EUROPE

its production of tractors and fertilizers forms part of the economy of the Black Earth region on its southern borders. Farms around Gorki specialize in 'technical crops' such as flax and wool, for the mills of the Moscow Ring.

The steppe-lands of the Middle Volga contain prairie-land in almost every stage of development. Poorer areas towards the desert margins produce wool, mohair, and camel-hair, and there is a large trade in hides to the boot-factories at Moscow and Kalinin (Tver). Better grass-lands are devoted to large-scale wheat-farms, while the best parts of all produce mixed crops like wheat, hemp, and sugar-beet. Plans for the organized development of the area emphasize the need for better ranching methods, the growing of alfalfa, improvement of stock, marketing of meat, and utilization of by-products: already Saratov, with its stockyards and meat-works, is well on the way to becoming another Chicago.

As regards town-sites, Gorki has been described; the town marks the limit of navigation by big river-steamers. Kazan was a Tartar capital, at a meeting of routes to and from the Caspian and Baltic Seas and Siberia: the town still has a very 'Eastern' population. Samara, a fortress site on the edge of the steppes and at a big loop in the river Volga, is now important as the junction where the Trans-Siberian and Trans-Caspian railways meet. Saratov, on the north edge of the desert and at the entrance to the Caspian depression, is the second largest town on the Volga, Gorki being now much bigger.

The desert of the lower Volga defies even the plans of the Communists, and no startling developments have taken place except the reorganization of the Astrakhan sturgeon fisheries. Stalingrad (Tsaritsin) has important tractor-works, but the town's interests are to the north and west rather than with the desert to the south and east.

The Caspian is an inland sea and a shrinking sea, but a great sea: for huge areas in Caucasia, Persia, and the

RUSSIA IN EUROPE

trans-Caspian provinces it is *the* sea, and the river Volga is its doorway. Astrakhan, on the main stream, which is here two miles wide and at the head of a complicated delta, looks somewhat insignificant, tucked away in a corner of the map of Russia; but actually it is Russia's second port (Odessa being first), the headquarters of a great fishing industry, and the *entrepôt* for Volga and Caspian merchandise.

NOTEBOOK WORK: 16

Draw a map of the Volga basin to illustrate the previous section.

THE URALS

In the South Ural region is the largest industrial base of the U.S.S.R. Magnitogorsk is on the Asiatic side of the mountains, to the south-west of Cheliabinsk, at a point where there is one of the world's richest deposits of iron ore. Coal to smelt this ore has to come 1500 miles by train from Kuznetz, near Tomsk, in Siberia. Moreover, the land round Magnitogorsk is poor steppe with little prospect of producing much variety of foodstuffs. Yet here, in a space of less than five years, have risen three large towns. Magnitogorsk is now as large as Derby, Middlesbrough, Blackburn, or Huddersfield. The blast-furnaces and steel-works are the biggest and most modern that foreign engineers could supply, but without this plant any plans for the industrial development of Russia would have been futile, for the steel produced in the Magnitogorsk area has to supply the machine-shops of places throughout the U.S.S.R. The site of the works violates all the principles about the position of iron-works that have previously found places in geography books; the easy assemblage of coke and ore has always been judged a necessity, and yet here, at the world's largest works, 1500 miles of not too efficient railway separate the two essential commodities. Russia admits that all has not

A GEOGRAPHY OF EUROPE

gone according to plan, but the fact remains that the works not only survive but progress.

Other minerals—copper, zinc, nickel, and aluminium—are being worked or are planned to be worked in the near future in this South Ural region. Hydro-electric

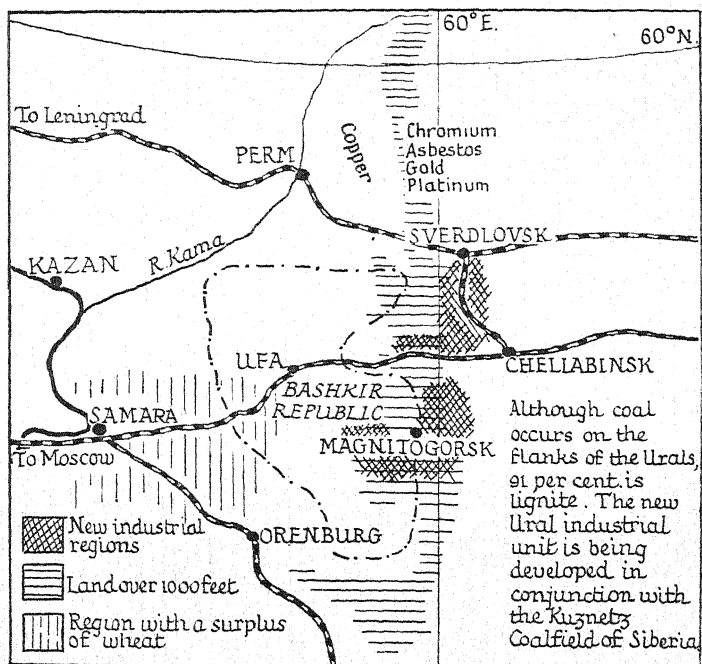


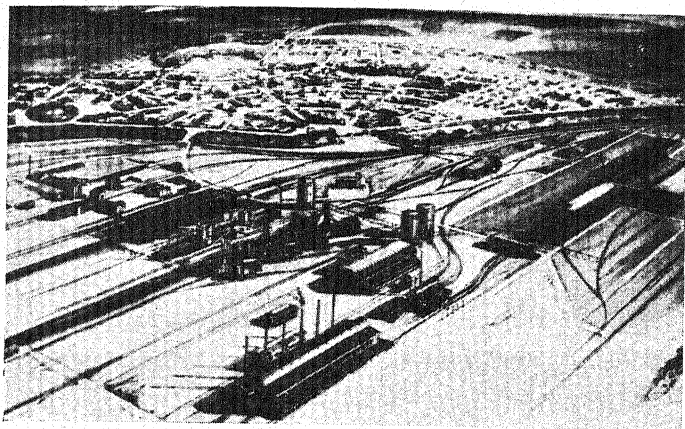
FIG. 8. THE NEW URAL INDUSTRIAL UNIT

stations are already built, and the weaknesses of the railway system are being rapidly cured by extra tracks and electrification. Perm produces 95 per cent. of Russia's copper—an important metal to a progressive state. In the past the Urals have supplied most of the world's platinum and a large amount of gold.

RUSSIA IN EUROPE

THE NEW RUSSIA: A SUMMARY

Russian Communists speak of the depression in Western Europe and North America, with its consequent unemployment and hardship, as "a reversion to barbarism": Western Europe and North America speak of Russian Communism in similar harsh terms. Each side can see



THE NEW METALLURGICAL WORKS AT MAGNITOGORSK

Notice the orderly lay-out, and compare it with the new Italian town shown at p. 341. Russia, starting industrialization late, has every opportunity of avoiding the evils resulting from lack of forethought in the dirty, unplanned towns of old industrial areas farther west.

Photo Planet News, Ltd.

very plainly all the errors of the other but few of the virtues, and much of the bad feeling that has occurred is due wholly to ignorance of the real facts and unwillingness to study the other side's point of view. There must be understanding before there can be better agreement; a geographical understanding is only one aspect, but without it the political, economic, and racial problems cannot be fully appreciated.

The Russians are mainly Slavs, a people with a culture

A GEOGRAPHY OF EUROPE

quite different from the Teuton or Latin civilizations farther west: it is unfair to expect that they should agree with everything of which the West is confidently proud. Next, the Soviet republics cover a huge area, with diverse surroundings that lend themselves to the development of economic independence; because Communism succeeds or fails in Russia it does not mean that similar results could be obtained in entirely different geographical and racial conditions. The steppe-lands are suitable for large-scale farming, a stage that would have come about eventually under any political conditions. Mineral resources in Russia are vast, and in a modern scientific world invited exploitation. The combination of developed agriculture and industry automatically lead to a fuller use of other scientific advantages such as the utilization of by-products and the adaptation of various materials as sources of power. In all these respects Russia has learned from the West and adopted Western methods: in exchange Russia has taught the West planned orderliness of development, so that Germany, Italy, Britain, and the United States all now have 'five-year plans' for some part of their economy. Capitalism and Communism have both contributed towards the settlement of world problems.

Russia has one great drawback to development—an illiterate population. Tremendous efforts are being made to right this wrong by the education of the people in two main directions: (a) the virtues of the Communist State, and (b) technical efficiency. The former is propaganda in self-defence; the latter is the result of what was a tragedy between 1917 and 1922, when mechanized methods were imposed suddenly on primitive peasants, and famines and other disasters occurred. The result of this intensive education has been more of a revolution than the political one of 1917—the complete alteration of the economy of Russia from agrarian-industrial to industrial-agrarian.

POLAND

Of the future it is idle to speculate: the second Five Year Plan nears fulfilment; acute famine seems to have passed; interfering propaganda abroad has given place to concentration on internal problems; and now Russia has become a member of the League of Nations.

NOTEBOOK WORK: 17

Summarize the geography of the natural regions of Russia in Europe in tabular form as follows:

Column 1: The natural regions—tundra, coniferous forest, deciduous forest, steppe, desert, the Caucasus, and the Ural Mountains.

Column 2: Climatic notes for each region under headings of (a) temperature (summer and winter), and (b) rainfall (amount and seasonal distribution).

Column 3: Food products typical of each region, noting, for example, breads, butter, and other fats, etc.

Column 4: 'Technical' crops of each region.

Column 5: Mineral deposits and power resources.

Column 6: Towns and their industries.

POLAND

NOTEBOOK WORK: 18

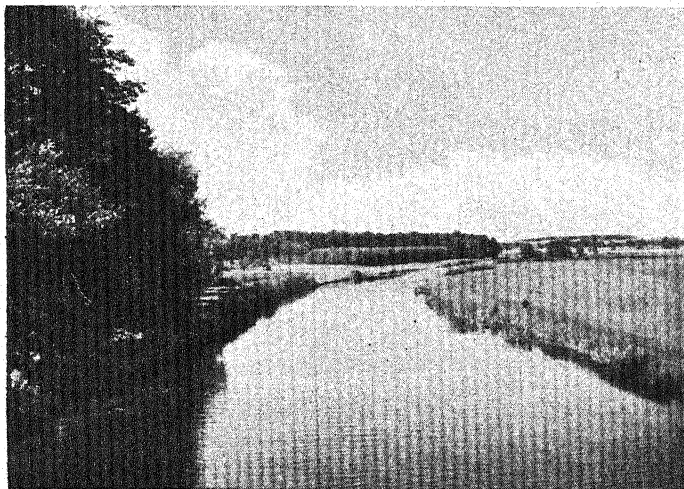
From an atlas trace or draw the courses of the river Vistula and its tributaries. Next add the boundaries of Poland, insert the names of surrounding countries, and add brief notes about the boundary, taken from the following section. (There is more to add to this map later.)

THE BOUNDARIES OF POLAND

(a) The wedge of Polish territory east of Lithuania and including Vilna (Wilno) was taken forcibly from Lithuania in 1920 on the grounds that the city contains a majority of Poles; Lithuania, unable to obtain redress, retaliated by seizing Memel, a German port, the cession of which to Lithuania had not been decided by the League of Nations.

A GEOGRAPHY OF EUROPE

(b) A long stretch of the frontier between Poland and the U.S.S.R. is a natural boundary, although the map suggests artificiality; the Pripet or Rokitno swamps of White Russia form an almost uninhabited and impassable zone. The line of easy communication from Poland eastward is marked by the main railway through Minsk and



A TRIBUTARY OF THE VISTULA ON THE POLISH PLAIN

Three regions in Poland are illustrated—low land, upland, and high land—at this page, p. 129, and p. 99 respectively.

By courtesy of the Polish Embassy

Smolensk. Nevertheless, there is yet no finality about the whole Polish frontier bordering Lithuania, the U.S.S.R., and, in the south-east, Rumania.

(c) The Carpathians form a natural southern boundary, the ridges themselves being the Slovakia of Czechoslovakia. But at the lowland between the mountain-folds and the Bohemian plateau-block—*i.e.*, at the entrance to the Moravian 'Gate' near Cracow—physical features and economic developments have caused frontier difficulties,

POLAND

for here is a rich coalfield and industrial area (Upper Silesia) which has now been split into two to give Poland the major portion. A plebiscite in 1926 in favour of return to Germany failed to alter the frontier, and the existing boundary is still a vexed question.

(d) The western boundary of Poland has been fixed so as to include on the Polish side the majority of Poles; along the whole frontier there is a difficult problem of 'minorities,' particularly of Germans unwillingly under Polish rule.

(e) Finally there is the strip of territory called the Polish Corridor, intended to give Poland access to the sea. Unfortunately the wedge isolates East Prussia from the rest of Germany. Danzig, the Corridor port, contains only 4 per cent. of Poles, so that it would have been unjust to include the city in a land based on Polish nationality; accordingly the port and a small area round it are now a Free State under the protection of the League of Nations. This has led to an unsatisfactory state of affairs which will be explained later.

THE LAND OF THE POLES

After the last war the statesmen of the victorious Allies promised independence to certain peoples who claimed to have been unwilling subjects of the Central Powers. The political map of Europe was redrafted to form new countries based on racial, linguistic, or religious unity. Thus Poland came into being as the land of the people called Poles. They are Slavs, like most Russians, the Czechs, the Serbs, and others; but the Poles are intensely proud of their own traditions, very patriotic, preserving their own language, and often despising or even hating brother-Slavs. History tells how there have been kingdoms of Poland before of varying extent and power; at one time Poland ruled from Baltic Sea to Black Sea. But always it has been a story of conquest by neighbours or

A GEOGRAPHY OF EUROPE

disruption within the kingdom; a stable Poland has seemed impossible. To-day, however, the Poles are most enthusiastic for their independence once more and very ambitious for the future.

Geographically Poland is midway along the Great European Plain; politically Poland is a buffer between the Communism of Russia, the Fascism of Germany, and the democracies of Scandinavia and Czechoslovakia; racially the land is between Teuton and Slav—30 per cent. of the present population consists of 'minorities'—*i.e.*, people who are not Poles. Most Poles are Roman Catholics, but towards the eastern frontiers people belong to the Greek Church; beyond the boundary eastward is the official atheism of the U.S.S.R., and westward Protestant North Germany. Economically Poland is at a stage between the industrialization of the West and the peasant-life of south-eastern Europe and pre-War Russia; the modern scientific orderliness of the Prussian mind penetrated from the west, and the humble peasant faith from the east. Such is the new Poland—not Russian, not West European, not industrial, not agricultural, Slav yet not Slav—a strange mixture with a problematic future.

PEASANTS

The word 'peasant' has already been used many times in this book, and one is apt to read the word without fully appreciating its meaning. 'Peasants' recalls perhaps to English readers French or Russian farm-folk, or maybe a vague idea of a Peasants' Revolt long ago. The word has now a special meaning. Continental people are equally hazy about the idea of 'farmer'; to them 'farmer' is 'peasant,' but to English people it suggests 'gentleman-farmer' or John Bull—certainly not the humble peasant.

The conditions of peasant-holdings vary in different European countries, but the general idea of peasant life is much the same everywhere. The peasant is very

POLAND

frequently the owner of a little farm, perhaps a unit or perhaps a collection of scattered plots on the strip-system of agriculture. On this land he grows his own bread and vegetables, and keeps chickens, a goat, or maybe a cow, so that he is supplied with life's necessities. His wife spins and weaves wool or flax for clothing; house and furniture are humble and home-made. A portion of the farm is set aside for a 'money-crop'—for example, sugar-beet, flax, or potatoes—to be sold to a local factory; extra money may be made, too, by selling butter, cheese, lace, gloves, etc., at the village or town. With this cash the peasant buys pots and pans, and luxuries like coffee and fish that his farm cannot provide; but very often the money is hoarded, because the peasant, used to humble living, can see little need for these extras. Peasant life represents a stage that was quite general before industrialization occurred, and, provided the standard of living is not too humble, there is much to be said for the independent life. Our nearest approach to the peasant is the Scottish crofter.

The "Youth Movement" in Germany is a revolt against industrialism and a plea for a return to simple peasant-life. In Russia the young folk strive after the bliss of industrialization.

STRUCTURE

In order to understand peasant-life in Poland it is necessary to know something of the kinds of land the people have to farm—that is, the structure of the country must first be studied. A diagrammatic section across Poland from north to south would show four distinct physical regions: (a) a wide plain, (b) a hilly area which is the worn stump of an old mountain block, (c) a rather narrow valley, and (d) the Carpathian slopes.

NOTEBOOK WORK: 18—*continued*

Add to the map already drawn shadings to show the four regions mentioned above. The Carpathian folds are a very

A GEOGRAPHY OF EUROPE

distinct physical feature; Poland in this region is a land of forested mountains and scenery on a grand scale. The wide plain with Warsaw in its centre is easy to recognize from an atlas; this lowland broadens eastward into the Russian Plain (which, however, is of quite different formation, being a vast mountain stump denuded to a 'platform'), and is continued westward as the North German Plain. The position of the narrow valley (*c*) is shown by the courses of the upper Vistula and upper Dniester. The true extent of the old worn block (*b*) can be seen only on a geological map; the physical map may show its general position by a colouring of land between 600 and 1500 feet high. Actually this hilly plateau is a long, rather narrow, broken belt lying due east and west in Poland, approximately along the line between Breslau and Kiev. (See Figs. 10, 11, 22.)

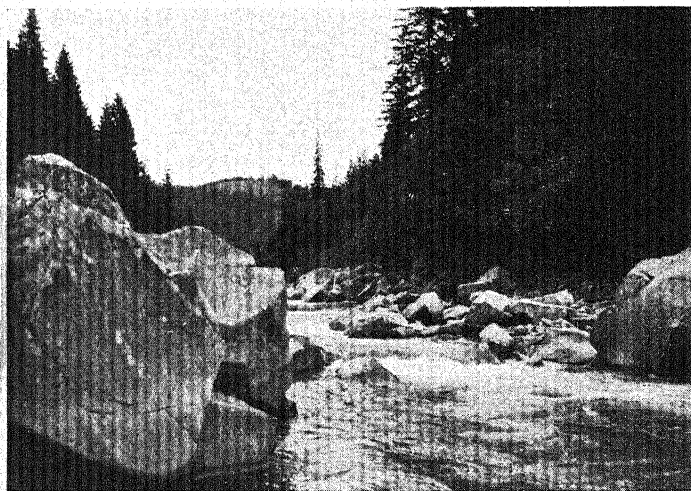
PEASANTS IN POLAND

Three-quarters of the people of Poland are farmers; only 15 per cent. are engaged in industry. Much of the plain is rich farm-land with fine, deep soils originally deposited in glacial lakes, but in other places stony moraines break the general level and divert the rivers. Floods are a danger in early spring, when the melting snows of the Carpathians fill the rivers before their sluggish lower courses are free from ice, and summer thunderstorms also cause sudden rises in the water-level. The lower Vistula has elaborate drainage works and a special canal at the mouth to relieve flood-water—a scheme carried through with Prussian thoroughness when the land belonged to Germany. The peasants of the plain grow rye and potatoes as bread-foods; wheat thrives only in the warmer climate and better soils of the narrow valley north of the Carpathians. Sugar-beet and flax are money-crops which are sold to itinerant middlemen (often Jews), who in their turn sell the produce in bulk to the factories. A peasant's total money-income for the year is much less than the annual wages of an English farm-labourer.

Animals include herds of pigs in the beech-forests of

POLAND

the south—Poland being a big exporter of cheaper qualities of bacon. Sheep on the hills or the morainic heath-lands provide wool for the Warsaw mills. Dairy-cattle are generally important, because the cultivation of sugar-beet and dairying are complementary industries, for the pulp left over after sugar has been extracted at the factories



A TORRENT IN THE EASTERN CARPATHIAN REGION OF POLAND

By courtesy of the Polish Embassy

makes good fodder for milch-cows. Cultivation is most intensive towards the west (German) frontier, where agriculture and associated industries are well correlated: most sugar-factories and works making starch, alcohol, and flour from potatoes occur round Poznań (Posen). Towards the Russian border cultivation dwindles rapidly as the Pripet swamps are approached, and even in more fertile eastern areas there is not the same scientific orderliness associated with the farming as there is along the German frontier. In the south-east, towards the fertile

A GEOGRAPHY OF EUROPE

steppes of Rumania and Russia, wheat, maize, hemp, tobacco, and potatoes are grown; but here too there is a sharp contrast to-day between the modern exploitation of Russian land and the old-established peasant methods of Poland. On the Carpathian slopes lumbering (both hard and soft woods) is important.

INDUSTRIAL POLAND

The Silesian coalfield will be described later as one industrial unit. For the present it must be noted that Poland, as the result of war treaties and a plebiscite, has obtained three-quarters of the mines, furnaces, and foundries in the area, including Krolewska Huta (Königshütte), Katowice (Kattowitz), Oppeln, and Gleiwitz. This industrial region, with the Cracow area to the east of it, owes its dense population to the exploitation of coal and ores associated with the surrounding mountains. Zinc, lead, and iron ores are mined, and salt at the wonderful mines of Wieliczka, south of Cracow; and the oilfield of Drohobycz is partially developed. More detailed accounts of manufactures will follow (pp. 129-131); note now that the area is a centre of heavy industries and has a surplus of coal.

Poland, being mainly agricultural, has no great home demand for coal; hence the Silesian surplus is available for export. This export trade has grown rapidly in the last few years, and was encouraged by the French occupation of the Ruhr, by the British coal-strike of 1926, and by the cheapness of Polish coal due to differences in the wages of miners in Poland and Great Britain (four shillings a shift compared with nine shillings). The markets for the Polish coal are the Baltic lands—an area that Britain has relied on as a market for Northumbrian and Fife coal.

Warsaw and Łódź are both industrial cities, manufacturing local flax and wool, and importing raw cotton also. Warsaw has a big leather industry. The market for the finished goods is almost wholly in Poland itself.

POLAND

TOWNS

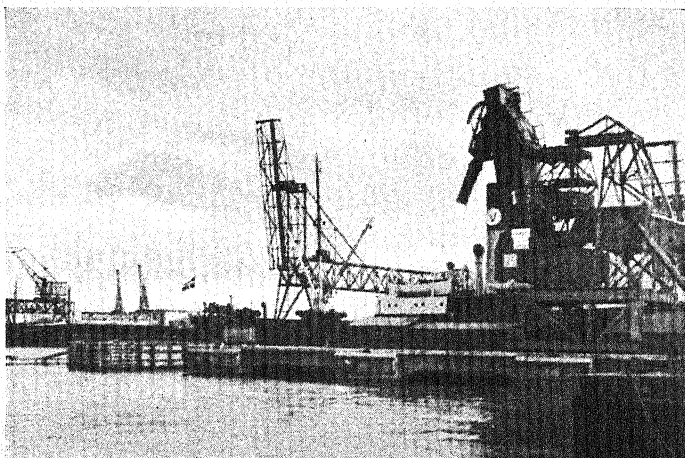
When the early Slav migration was initiated by the invasions of the Eastern horsemen along the steppes (Fig. 7), the Polish branch of the Slav family sought refuge, just as the Russians did, in an uncongenial land of forest and swamp, with the rampart of the Carpathians between them and the invaders on the steppes to the south. Eventually, however, this forest-fortress turned out to be a trap, for as Germany, Russia, Sweden, and Lithuania became strong nations each harassed the Poles in their unprotected home around the Vistula; it was only by alliances that Poland was able to remain a country. But before 1800 she had disappeared, the territory being shared by her two strongest neighbours, Germany and Russia. Poland went: the Poles remained.

Cracow was the early capital of the Poles, a city on a fortress site on the upper Vistula at a strategic point near the Moravian "Gate." The industrial development of the town is only recent (p. 130), but its salt trade gave it commercial importance in the past. Warsaw, the present capital, is in the centre of the Vistula basin, on the river where a hill guarantees freedom from floods, where the tributaries Bug and Bzura form a natural east-west route, and in a fertile plain between the hard rocks to the south and barren moraines to the north.

Danzig is not in Poland, but is the natural outlet to a country based on the Vistula basin. In some ways the city is comparable to the City of London, with its banking concerns, its streets named after prosperous guilds, its markets, its foreign 'colonies' (there was once a big British colony in Danzig), and its wharves. Danzig has had a chequered history: very early it became German; then it was a great and free Hansa city; next Poland acquired it, although the port retained its 'free' status; later it went back to Germany; after the Napoleonic wars it was free again, but with a French garrison; then it became

A GEOGRAPHY OF EUROPE

part of Prussia; and now, once more, it is a city-state. But the port has fallen on bad times. In the first place Poland claimed Danzig, but its overwhelmingly German population forbade its inclusion in a land of Poles: accordingly the city was made free, but with every facility given to Poland to use this natural outlet of their land.



MODERN COAL-LOADING MACHINERY AT GDYNIA,
POLAND'S NEW PORT

By courtesy of the Polish Embassy

The mere making of an artificial frontier, however, severed Danzig from its hinterland, and the Poles aggravated the situation by building a new port, Gdynia, within a few miles of Danzig but outside the League's territory and within the Corridor. To-day Gdynia has changed from a small fishing village to a busy town of 35,000 people, and Danzig meanwhile is stagnant.

Łódź, Poland's Manchester, was only a village a hundred years ago; now it has half a million people in a straggling town of mills and streets of workers' houses: the place is wholly a product of the Industrial Age.

POLAND

Routes

The geography of a river-basin suggests routes up and down the main stream. As Poland is the Vistula basin one would expect a north-south main route, and the general slope of the land implies movement from the mountains, with their mines and forests, to the plain, with its farms. But the history of Poland has forced on to the country a much more artificial system of east-west routes. When Poland was divided between Germany and Russia German railways and roads of the west were linked *via* Poznań with Berlin, while Russian railways and roads of the east linked Warsaw *via* Brest-Litovsk with Moscow: for military reasons the railways changed gauge at Warsaw. Thus Poland to-day, wanting north-south communication to link industry with agriculture, and coal surplus with port, finds instead an east-west system of routes across the unit of the plain. Efforts are accordingly being made to remodel the road- and railway-system, a line from the Silesian coalfield to Gdynia having already been built.

One other great route passes through Southern Poland, along the narrow valley on the north flank of the Carpathians. This is the natural road from the Black Sea to the North Sea, from Odessa *via* the Dniester valley, the upper Vistula, the upper Oder, and the lower Elbe, to Hamburg. Polish towns on the route are Lwów (Lemberg) and Cracow, fortresses of old and fortresses still.

NOTEBOOK WORK: 19

(i) Draw a north-south section across Poland and mark the characteristic products of each region.

(ii) Draw a map which shows both the Baltic Sea-Black Sea route (Fig. 7) and the Black Sea-North Sea route detailed above.

(iii) Draw a map to show the hinterland of Danzig, and write an explanatory note.

A GEOGRAPHY OF EUROPE

SOME STATISTICS ABOUT POLAND

For comparative area, uses of land, comparative population, and occupations of the people, see Figs. 26, 27.

CROPS IN 1933

PRODUCT	AREA, IN 1000 ACRES	YIELD, IN 1000 TONS
Potatoes . .	6,770	28,330
Rye . .	14,270	7,073
Oats . .	5,447	2,682
Wheat . .	4,187	2,174
Sugar-beet .	244	1,852 ¹

For coal production see p. 138.

PRODUCTION OF PETROLEUM IN 1933, IN 1000 TONS

Poland	55 ¹
U.S.A.	122,535
U.S.S.R.	21,440
Venezuela	17,480
Rumania	7,387
Persia	7,100
Dutch East Indies	5,527
Mexico	5,087

EXPORTS IN 1934, IN PERCENTAGES OF TOTAL VALUE

Coal and coke	17
Other minerals	15
Timber	18
Farm produce of all kinds	27

These exports went, in percentages of total value, to: United Kingdom, 20; Germany, 17; Austria, France, Holland, Sweden, Belgium, and Czechoslovakia, about 5 or 6 each.

IMPORTS IN 1934, IN PERCENTAGES OF TOTAL VALUE

Machinery, vehicles, and metal goods	19
Foodstuffs	12
Raw materials for manufacture	33 ²

These imports came, in percentages of total value, from: U.S.A., 15; Germany, 14; United Kingdom, 11; France, Czechoslovakia, Austria, and Holland, 7 to 4.

¹ Yielding 417,800 tons of sugar. ² Nearly one-half of this was cotton.

THE NORTH GERMAN PLAIN

THE NORTH GERMAN PLAIN

STRUCTURE

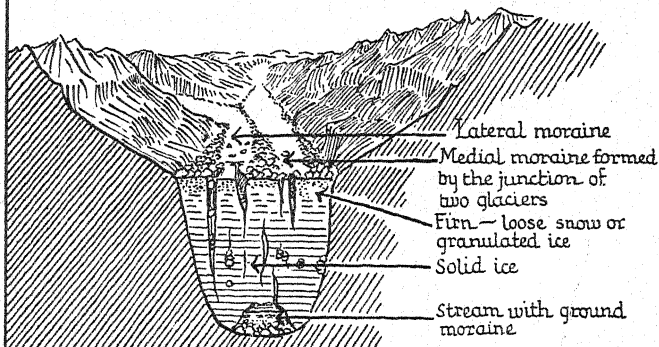
This region is the continuation westward of the Polish plain that has just been described. It must be noted carefully that the title of this section is not 'Germany,' but 'The North German Plain'—only one portion of the whole country. The flat greenness of the plain in the atlas is very misleading, for it is neither flat nor wholly green: there are purple moors, black pine-forests, green pastures, and golden corn-lands; some parts attract people, others repel. The whole area is covered with different soils left by a retreating ice-sheet (Fig. 9)—finely ground 'flour soil,' sandy gravels, stiff clays, and heaps of boulders, while on the southern edge there are wind-formed deposits of loess (Fig. 10). The fine soils are generally good agricultural land, because they consist of a mixture of constituents and are not old enough to have had their goodness leached. Porous gravelly soils dry too rapidly to support much vegetation, while stiff clays lack porosity and need loam to lighten them. Morainic heaps are infertile, but the hollows between moraines may contain arable land or swamps and thickets.✓

Much of Germany on the plain and elsewhere is still forested, and these areas are to Germans almost what the sea is to the British—places linked with romantic stories of the past and with romantic holidays of the present. The lakes associated with the moraines also have a charm of their own, their forested shores being the sites of camps, hikers' hostels, open-air schools, and sanatoria.✓

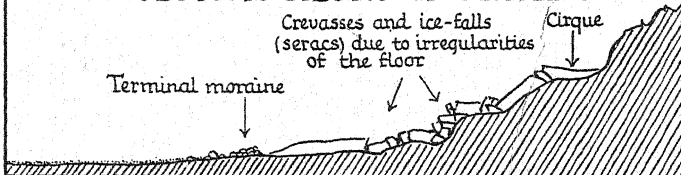
The longest stretch of infertile land in the plain is a line parallel to the North Sea and Baltic coasts of Germany—the Geest, Lüneburg Heath, and the Baltic Heights. The last-named are a broken moraine often of considerable height, a land of hundreds of little lakes, of pine-woods, or of short upland grass. Sheep are kept, and the East

MORAINES

SECTION ACROSS A GLACIER



SECTION ALONG A GLACIER



AFTER A GLACIER HAS RETREATED

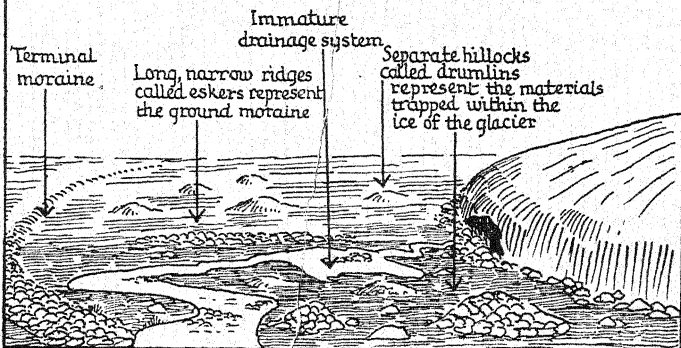


FIG. 9

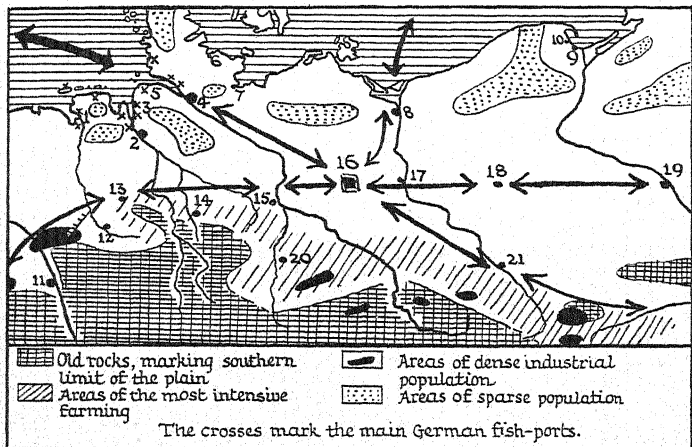
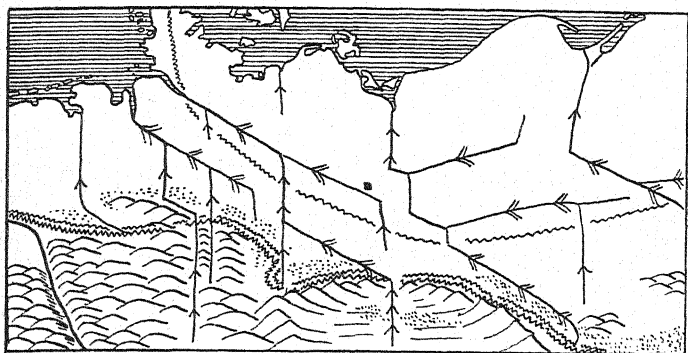


FIG. 10. THE NORTH GERMAN PLAIN: RIVER SYSTEMS AND DISTRIBUTION OF POPULATION

The upper map simplifies the complex courses of the rivers of the German plain. Rivers marked with single arrows represent the system that flowed from the old highlands of the south. The ice-cap reached the double zigzag line, obliterating the old river system. Rivers marked with double arrows represent courses between moraines formed as the ice retreated to the north-east. The single zigzag line marks a long pause of the retreating ice, during which time the loess, shown by dots, was probably deposited.

A GEOGRAPHY OF EUROPE

Prussian portion of the Heights used to be a stud-farm for German cavalry-horses. The western heaths, facing the North Sea, are the accumulated loads of streams that once flowed westward in the hollows between successive moraines (Fig. 10). Lüneburg Heath and the Geest are pebbly, heather-covered uplands where honey is an important product; but new labour-camps of Nazis are busy improving the heaths so that they shall yield food-crops to help towards the establishment of a self-supporting Germany. Schleswig-Holstein contains representatives of the terminal moraines of the Baltic Heights type on the eastern side, Geest-land in the centre, and salt marshes on the west.

Between this barren, thinly populated, and unimportant northern belt and the scarp of the old block-mountains that form the southern edge of the plain there is a broad trough of farm-land, most fertile towards the south, where loess and weathered materials from the mountains add to the variety of constituents in the soil. The belt of most intensive agriculture is from the upper Oder valley north-westward towards Magdeburg and Hanover, ending at the gravelly heaths on the eastern borders of Holland (Fig. 10, ii). North of this very fertile belt is a land of many farms, but also of much woodland—a region sometimes of thorough cultivation, sometimes a barren subsidiary ridge of one of the southern moraines, sometimes an isolated lake-land, like Spreewald (where villages are all little Venices, but with their water-streets thickly frozen every winter), and sometimes woodlands with game-preserves in private estates or with hostels for German holiday folk. Where land is fertile farms are only small, but they increase in size eastward and northward, where a harsher climate and stonier soil make peasant existence on small-holdings almost impossible. In East Prussia there are big estates belonging to the German aristocracy, with a system of cultivation and employment still not far removed from the feudal days of war-lords and serfs. The

THE NORTH GERMAN PLAIN

little farms of the fertile south represent some of the world's most intensively, most scientifically, and most industriously cultivated land. Thrifty farmers and Prussian orderliness have been responsible for the high productivity of these areas, while rich deposits of potash in the heart of the region (Fig. 12) have provided German scientists with the raw material for increasing yields.

FARMING

Rye is the most general cereal of the plain; barley is often grown too, and buckwheat is an important fodder-crop, but wheat thrives only in the richer lands of the south. Rye becomes 'black' bread, and the barley is either for brewing or for feeding to pigs for ham, bacon, and sausages. Potatoes are grown everywhere for 'bread,' as potato-flour, potato-cakes, and potato-pies, etc., or for feeding to pigs for lard, or for factories where starch and commercial alcohol for motors are extracted. The production of sugar from beetroot was a French discovery, but Germany was the first country to turn it to commercial use. To grow beet the land is ploughed and the young beet planted out by hand. During growth hoeing and weeding have to be frequent. Machines turn the full-grown roots out of their furrows, but men—or women more frequently—have to gather them, knock off the sticking clods, 'snack' the green tops, and load the beets into carts. The roots are kept in 'pies,' with a crust of earth and straw to keep them in good condition until the sugar-factory sends for them. The green tops are used as fodder at the farms. All these processes are spring and summer work: in late autumn and winter the factories are busiest, crushing the roots, concentrating the syrup, and crystallizing the sugar; some farm-hands find employment at the works in winter when outdoor farm-work is slackest. The pulp from the mills is returned to the farmers, who feed it to milch-cows. The biggest centres

A GEOGRAPHY OF EUROPE

of beet-sugar production in Germany are between Magdeburg and Hanover, and round Breslau.

Everywhere on the plain there are dairy-cattle, with most towards the meadows of the lower Elbe and lower Oder, and on the polders (drained marshland) of the North Sea coast. Pigs are kept throughout the dairy-lands,



SORTING POTATOES ON A FARM IN THE NORTH GERMAN PLAIN

See the note to the illustration at p. 170.

By courtesy of the German State Railways

feeding on skimmed milk and other farm waste. Sheep are relatively unimportant in Germany. The rapid growth of centralized populations after the Industrial Revolution forced farmers to keep cows rather than sheep to supply the big new towns with milk and butter. Sheep used to be important (in 1873 there were 25 million sheep in Germany; in 1925 4,750,000; in 1932 3,381,000), and relics of the old woollen industries will be explained later in connexion with modern mill sites. Flax, too, used to be more important, but now, compared with Poland,

THE NORTH GERMAN PLAIN

Russia, Holland, and Belgium, Germany is only a small producer.

NOTEBOOK WORK: 20

(i) Draw a map to show the natural regions of the North German Plain.

(ii) Make a list of the conditions (soil, climate, labour, etc.) necessary for the cultivation of sugar-beet and the manufacture of beet-sugar.

A COMPARISON OF CLIMATES ALONG THE GREAT EUROPEAN PLAIN

—	—	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
Emden {	Temp.	34	36	39	45	54	59	63	63	60	48	41	36
	Rain.	2.0	1.8	2.0	1.5	2.0	2.5	3.1	3.6	2.8	3.0	2.6	2.4
Warsaw {	Temp.	26	29	35	46	57	63	66	64	56	46	36	30
	Rain.	1.2	1.1	1.3	1.5	1.9	2.6	3.0	2.9	1.9	1.6	1.5	1.5
Kazan {	Temp.	7	10	20	38	54	63	68	63	51	39	25	11
	Rain.	0.5	0.4	0.6	0.9	1.6	2.2	2.4	2.4	1.6	1.1	1.0	0.7

Of these figures those for Emden and Kazan represent the contrasted climates of the oceanic and continental ends respectively of the Great European Plain; those for Warsaw represent an intermediate type.

It has already been pointed out how temperature ranges increase and rainfall decreases with distance from the ocean (p. 37); in this study some further implications resulting from these factors will be considered. First, there is an alteration eastward along the plain in the seasonal grouping of the year. In the west there are the four seasons typical of the British Isles climate, but eastward spring and autumn tend to disappear, winter gives way more rapidly to summer and *vice versa*, and the year divides into two seasons only—one hot, one cold. Secondly, the average monthly temperatures as given above tend to be more and more misleading for places nearer the oceanic influence, wide variations from day to

A GEOGRAPHY OF EUROPE

day being very common. For instance, the 34° F. given as the January figure for Emden represents the average of severe wintry snaps that may have ten or more degrees of frost, sunny mildness that may make the thermometer rise almost to summer temperatures, raw days with sleet, and muggy days of cloud and drizzle. Eastward these marked variations tend to disappear; occasionally oceanic influences penetrate far inland and cause a partial thaw in winter, but generally the severity of winter is normal.

The reason for the eastward decrease in variability is the exclusion of the cyclonic systems typical of west coasts. A full account of the causes of cyclones is outside the scope of this book, but it is necessary to understand certain principles of their formation before climatic variability can be fully appreciated. Briefly, Western Europe comes under the influence of 'hills' and 'holes' of air, drifting eastward like waves and eddies in a turbulent stream of west winds. The holes (depressions) are being constantly filled by a downslope from the surrounding hills of air, until eventually the disturbance 'dies' when the hole is full. (The reader must refer to a text-book on weather to find out how these cyclones originate, and why the endless procession of them comes towards Europe: the series are much more orderly than this metaphor of eddies in a stream would suggest.) The inward motion of air towards the centre of a depression implies winds from every point of the compass, so that as a cyclone passes over an observer he notices the gradual change of wind direction. This change is the cause of the variability of temperature from hour to hour, or day to day, in a west-coast climate.

The exclusion of cyclonic influences will remove such variations. In winter the intense cold of interiors far from the ocean causes a settling of cold, heavy air near the ground, and the consequent establishment of a high-pressure system which acts as a barrier against surface disturbances like cyclones. They become trapped in

THE NORTH GERMAN PLAIN

'bays' of the anticyclone's ragged edge, or ride upward over its thin wedge-shape and die in the upper air.

In summer, however, the continental low pressure due to intense heating does certainly invite the entrance of cyclones, but it is still a matter of doubt how far inland they can actually penetrate before they die. They penetrate the Baltic area and, in winter time only, the whole Mediterranean area; the spring rains of the South Russian steppes are attributed to cyclones that move across the region only when the continental 'high' is beginning to recede with winter's departure. Yet far in the interior of European Russia summer storms of a cyclonic nature occur. It is generally thought now that these are not invading depressions from the west, but only local phenomena of a convectional nature, wherein heated air rises, expands, and cools, the vapour condensing often as a thunderstorm. In these areas it seems as if the air movements are just up and down.

The distribution of rainfall from west to east across the plain is now for the most part explained. In the west there is no dry season, but a maximum of rain occurs in late autumn and winter, when cyclones are at their greatest frequency and regularity. In the east the summer maximum of convectional rain is most marked, and the precipitation of snow from the intensely cold winter air is only light. The central region in Poland is a combination of both *régimes*.

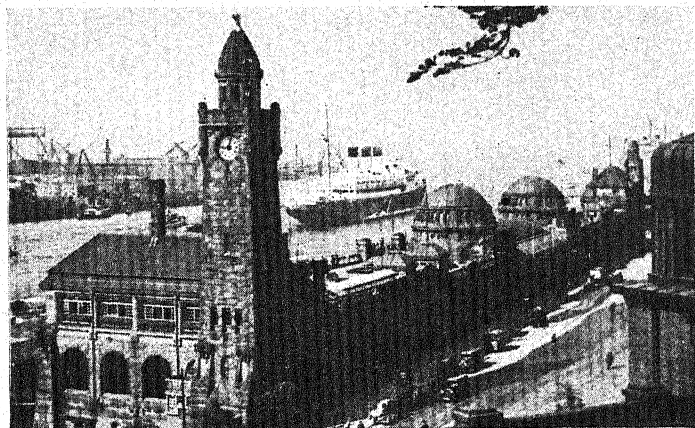
COAST-LANDS AND PORTS

Germany has two coasts, a short one on the North Sea and a longer one on the Baltic. Study the shape of these on the map from the point of view of haven-sites only. Along the Baltic coast a current, driven by prevalent west winds, has built sand-bars (*Nehrungs*) across indentations to form lagoons (*Haffs*), which are certainly sheltered havens, but have the disadvantages of being shallow and

A GEOGRAPHY OF EUROPE

of freezing easily in winter because the water is so fresh. The greatest development of *Nehrung* coast is in the east, the type gradually altering westward until in Schleswig-Holstein there is an indented coast with long inlets.

The tidal wave hardly penetrates the Baltic Sea, but it enters the North Sea easily from the north, becomes piled up on the shallowness of the continental shelf, and is



THE RIVER ELBE AT HAMBURG

By courtesy of the German State Railways

further heightened by the funnel-shape of the sea.¹ The German North Sea coast has estuaries scoured by the tides, but mists and the chain of low, sandy islands are a danger to shipping seeking these harbours. Nearness to the open ocean with its warm currents prevents the sea from freezing, although the sluggish rivers are frequently frozen not far from their mouths; Hamburg, for instance, has ice-breakers to keep the Elbe clear in severe winter weather.

¹ The tidal wave entering from the south and the effects of the two waves are explained at p. 159.

THE NORTH GERMAN PLAIN

NOTEBOOK WORK: 21

Draw a map of the German coast and mark (*a*) Kiel, Lübeck, Stettin, Danzig, Königsberg, and Memel, on the Baltic side, and (*b*) Emden, Bremen, Bremerhaven, Cuxhaven, and Hamburg, on the North Sea coast. Show the East Frisian Islands and Heligoland. (There is more to be added to this map later.)

Consider next, also with the help of an atlas, the hinterlands of the haven-sites. As the large bays are all flooded river-mouths the river-basins become the natural hinterlands.

(i) *Emden*. The river Ems flows through sparsely peopled heath-land in its middle course and through rich meadows in its lower course, but this rather unpromising hinterland has been artificially enlarged by the construction of the Dortmund-Ems Canal, linking the river to the crowded industrial area of the Ruhr (Fig. 14). The idea is to divert German-manufactured products to a German port for export, instead of having to pay for the privilege of using the Dutch portion of the Rhine; however, the attraction of the natural outlet has so far outweighed the merits of nationalism, and Emden remains a rather quiet backwater.

(ii) *Bremen*. The river Weser's upper course is in a mountain land of gorge and forest; as the river leaves the hills it passes through a rich agricultural and industrial region round Hanover, then finally past moor and meadow to the sea. The Weser is a much bigger river than the Ems, but is a more self-contained unit than the other rivers of the plain, which all become hinterlands of areas outside their own basins. Bremen, however, is a large and busy port, importing most of Germany's raw cotton and tobacco, with shipbuilding yards (Norddeutscher-Lloyd), machine-shops, and jute-mills.

(iii) *Hamburg*. The zigzag course of the river Elbe allows it to include as a hinterland not only the busy regions of its own basin—Prague, Dresden, Leipzig,

A GEOGRAPHY OF EUROPE

Magdeburg, and Berlin—but also the Upper Silesian industrial area, the Hanover region, and even the lower Oder and lower Weser areas. Thus Hamburg as a port serves most of Germany, and a large area of the central Danube basin too, importing raw materials required in the factories of the industrial areas and extra foodstuffs which Germany and Central Europe cannot supply for themselves, and exporting manufactured goods of an infinite variety. The only important German region not within Hamburg's hinterland is the Rhineland, but the proposed Hansa Canal from the Ruhr through Bremen to Hamburg is intended to divert the Rhine trade also. Hamburg is the largest port in Continental Europe, the headquarters of the Hamburg-Amerika Line, the Hamburg Sud-Amerika Line, the Deutsche-Australische Line, the Deutsche-Levante Line, the centre of many Continental services, a big *entrepôt*, and a busy manufacturing town with machine-shops, chemical works and rubber-works, sugar-refineries, breweries, and tobacco-factories. To-day the city is suffering acute depression, for trade restrictions severely affect a port with such a world-wide outlook: Hamburg has lived on internationalism, but Fascism aims at intense nationalism and economic self-sufficiency. The new policy in Germany will mean for Hamburg total reorganization to suit new conditions and considerable hardship during the process.

(iv) *Stettin*. The river Oder drains a very large area, but, as already explained, the traffic of some of its important regions tends to be diverted to the Elbe route. Stettin's markets, both for buying and selling, are in the Baltic area primarily—a convenient little unit in past days when ships were small and trade more localized, but somewhat of a backwater to-day, when ocean-routes and world-wide trade are general. The shipyards of Stettin make cargo-boats for the Baltic trade.

Danzig and the Vistula have already been considered. Of other German ports, Königsberg's importance has been

THE NORTH GERMAN PLAIN

more strategic than commercial in days when the frontier between Russia and Germany circled within a short distance of the town. Kiel was a big naval base in pre-War days, and still retains some of that importance. Lübeck, connected by canal to the lower Elbe, receives much produce of the Elbe basin destined for Baltic lands.

Both coasts of Germany have attractive seaside resorts catering not only for the people of inland towns but also for those of the big ports, which are quite a long way from the real seaside. Hamburg, for instance, is sixty miles from the sea: the inhabitants have many choices of holiday resorts—on near-by heath- and forest-land, on Lüneburg Heath, at bathing and boating centres along the Elbe, or on the coast, the nearest seaside being on the Baltic Sea.

BERLIN AND GERMAN UNITY

The diversity of surroundings in Germany has bred distinctive types of peoples; the Saxon is stolid, the Thuringian is like the Welshman, the Frank like the Irishman, the Bavarian like the Aberdonian, and so on. Every German, even to-day, is proud of his own special region or state first and of his country as a whole second. The build of the land and even the shape of its political frontiers militate against union. Until the middle of the nineteenth century there was no Germany, but a jumble of kingdoms, dukedoms, and principalities—some large, some small, many petty. Bismarck first welded this confusion into one country, which, kept united by discipline and competition with neighbours for world power, grew into the strong Empire of 1914. After defeat in the last war there came again the tendency to split into the former small units; disruption did actually occur until Nazi discipline again united the seceding states. "United Germany" is a Hitler slogan.

The German Plain lends itself more to the formation of large state-units than the hilly lands of the south do.

A GEOGRAPHY OF EUROPE

On the plain a small eastern state, outpost against Slav penetration, gradually grew by conquest, alliances, and the stern discipline of its military rulers into Prussia, and it was Prussia that eventually forced unity on the other German states. Until there was a united Germany there was no need for a governing centre for the whole, each state having its own capital and some cities, like Hamburg, being states in themselves (city-states). Town-sites on the plain had been chosen with regard to fertility of surroundings (to produce food) and to control of routes (for defence). Hanover is situated where valley routes from the plateau meet the east-west route along the plain, between the hard rocks of the south and the gravel of the north, in a fertile farming belt which has already been mentioned. Osnabrück controls the route round the western shoulder of the same plateau, while Magdeburg, at a bridge-point on the Elbe, controls the eastern shoulder and the route to and from the Leipzig 'bay' of lowland. The site of Brunswick is very similar to Hanover's. Frankfurt, on the Oder, corresponds to Magdeburg, on the Elbe, but without the fertility of the latter's surroundings and the important supplementary routes. Breslau is like Leipzig, the central market of a fertile bay, and both towns have grown rapidly since the development of industrial regions on the flanks of the surrounding highlands.

The towns mentioned are all of old foundation, with new additions that belong to the Industrial Age: Berlin, the capital and dominating city of all Germany, is of recent growth. (In 1600 it had 10,000 people; in 1700 60,000; in 1800 182,000; in 1910 3,734,000; in 1933 4,200,000.) The city is essentially the control-centre of a land held together by strict discipline, of a country strong in military tradition, of a nation with long land frontiers often against non-Teuton races. Besides being the political, strategic, and railway centre of Germany, Berlin is a big business centre like London, and a fashion centre like

THE NORTH GERMAN PLAIN

Paris; factories, mostly new and outside the city, manufacture mainly luxury articles like wireless-sets, pianos, cinema apparatus, motors, etc.—products that represent the assembling of parts produced largely in other, more strictly industrial regions.

NOTEBOOK WORK: 22

(i) Add to the map in Exercise 21 notes above each port about direction of trade, and notes below each port about hinterlands.

(ii) Make a table of British town-sites comparable to the German group consisting of Osnabrück, Brunswick, Hanover, Magdeburg, Leipzig. For instance, it is possible to find parallel sites along the north-south route of North-east England between the Pennines and the sea, or along the inner edge of the Welsh Mountains, or along the east-coast plain of Scotland, etc.

(iii) Draw a special map of Berlin as a route centre showing (a) the natural crossing of the lower Elbe—upper Oder route and the east-west plain route, and (b) the radiating railways (see Figs. 10 and 22).

SECTION III

THE INDUSTRIAL REGIONS OF THE CHIEF EUROPEAN COALFIELDS

THE ORIGIN OF INDUSTRIAL AREAS

To the south of the lowland plain of North Germany is a hilly region sometimes referred to as 'middle-lands'—*i.e.*, middle in height and position between the very high Alpine mountains and the plain. The industrial regions of this section occur on coalfields associated with the northern edge of these 'middle' blocks of old rocks (Figs. 10, 11).

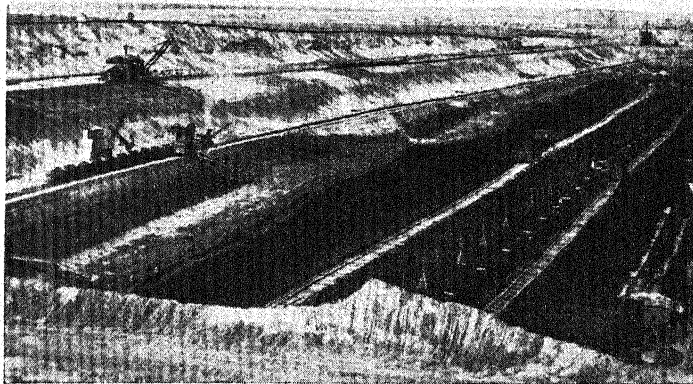
COAL

Just as periods of history have distinctive architectures, weapons, place-names, and so on, in the same way ages in earth-history have distinctive beds of rocks with distinctive fossils. Limestone represents an age of former clear, wide seas; basalt, an age of ancient lava-flows; coal, an age of tropical forests of the past. Somewhat similar conditions exist to-day, future beds of limestone, coal, basalt, sandstone, etc., being slowly formed.

There are different coals of different ages—black coal, brown coal, and fibrous peat, which is a very young member of the coal family; but the world's biggest deposits of the most valuable kind of coal are situated in one narrow belt round temperate latitudes in the northern hemisphere, through Britain, Europe, Siberia, North China, and North America, and are the products of definite geological ages when in that girdle grew vast areas of swampy tropical forests. Other vegetable refuse, accumulated in swamps of later ages, has turned into other coals like lignite (a brown crumbly coal) and peat. Coal

THE ORIGIN OF INDUSTRIAL AREAS

—black coal, as generally understood—is the product of only certain special periods, and rocks formed before or after those periods contain none. By studying the geologists' classification of rocks according to age, and then finding out which of the rocks in Europe are too old and



LIGNITE WORKINGS

Lignite, like peat, is a comparatively young surface-deposit. The soft brown coal is dug out by steam shovels in open workings.

Photo E.N.A.

which too young for coal, we ought to be able to find those intermediate regions where coalfields might occur.

NOTEBOOK WORK: 23

The key to a geological map is arranged in order of age, with the oldest rocks at the bottom and the youngest at the top. Copy the key to a geological map of either Europe or the British Isles, marking particularly the coal-measures.

The Sites of European Coalfields

The most conspicuous feature of a physical map of Europe is the Alps. These are 'young' mountains, consisting of

A GEOGRAPHY OF EUROPE

layers of young rocks crumpled and crushed into complicated folds and faults: their story will be told later (pp. 184-189), but for the present it must be understood that the Alps are folded only because on their northern edge there is a block which has acted as a buffer during

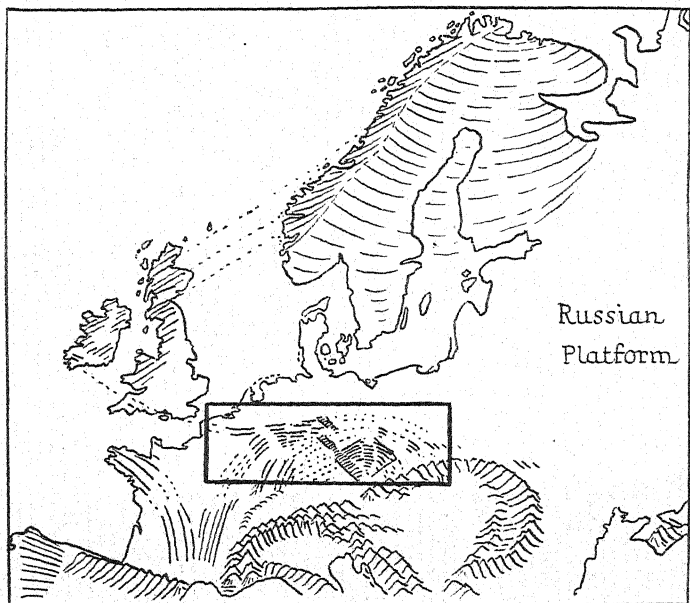


FIG. 11. MOUNTAIN SYSTEMS IN EUROPE

This map shows the very old rocks of the Shield formation and ancient folds in North-west Europe, the inter-relation of the old worn blocks of Central Europe (the 'middle-lands'), and the young Alpine folds of the south.

a mighty earth-push from the south. This block is a much less obvious feature than the folds against it, because it is made of such ancient rocks that they have been weathered to mere stumps during their long existence. The following portions of the block are shaded with continuous lines in Fig. 11, the dotted lines suggesting the directions of very

THE ORIGIN OF INDUSTRIAL AREAS

old mountain ranges of which the blocks are now poor remnants: the Central Massif of France, the Armorican Peninsula (Brittany), the Ardennes in Belgium, the Lower Rhine Highlands (cut into four big lumps by the gorges of the Rhine, Moselle, and Lahn), the Vosges and the Black Forest (between which a weak strip has collapsed to form a rift), the Bohemian 'Diamond' and the continuations of two of its sides in the Thuringian Forest and the Harz Mountains, the plateau of South Poland, and the still lower 'platform' of the Russian plain.

These blocks are of rocks older than coal; the plain to their north consists of very young rocks, much younger than coal: the coal itself outcrops against the northern flanks of the blocks, dipping sharply underneath the younger rocks. It was the outcrops that revealed the presence of the coal, but surface-workings soon removed the more accessible deposits, and shafts had to be sunk to reach deeper seams farther from the edges of the blocks. The actual extent of the coalfields can be seen from Fig. 12 (Silesia and Saxony), Fig. 13 (Ruhr), and Figs. 13, 19, 21 (Franco-Belgian): smaller pockets of coal, also on the edge of blocks, will be described in later chapters.

NOTEBOOK WORK: 24

Make an enlargement of the area shown within the rectangle in Fig. 11. With the help of an atlas mark the boundary of the old blocks accurately, and add the coalfields.

Industrial Regions

Long ago human settlements had their millers, blacksmiths, cobblers, weavers, and other artisans; that is to say, they had many of the industries of modern industrial regions, but only on a small scale. The Industrial Revolution enlarged and localized industries already in being. The history of the present industrial regions begins in the far past, their products to-day often depending on early

A GEOGRAPHY OF EUROPE

specializations which in their turn depended on peculiar surroundings. But some modern industries have no connexion with the past, their origin being due to the genius or luck of their founders, their success to their association with older thriving concerns; some of the most recently established factories are situated wholly with regard to markets and not to sources of raw material and power, and the tendency to-day is towards decentralization. So, in studying the geography of an industrialized region, three main eras of development have to be considered—(a) a long period of widespread cottage industry, (b) a remarkably rapid change throughout the nineteenth century to the centralization of industries on coalfields, and (c) the present developments deliberately removed from the old congested centres of industry.

Iron and Steel

To avoid unnecessary repetition in describing similar industries on different coalfields, the manufacture of two important products—steel and textiles—will be explained first in general terms, so that only differences of detail need be considered in different regions.

First consider the production of iron and steel on any coalfield. To make a ton of pig iron at a blast-furnace to-day requires on the average the assembling of $2\frac{1}{2}$ tons of iron ore, $2\frac{1}{2}$ tons of coal to produce $1\frac{1}{2}$ tons of coke, and half a ton of limestone as 'flux.' Steel is a comparatively new commodity, and each year still sees the production of different steels and better steels for almost any purpose demanded. Pig iron is brittle; wrought iron is malleable but soft; steel combines the good qualities of both and introduces other qualities as desired. It is made by the addition to wrought iron of measured quantities of carbon, manganese, nickel, chromium, tungsten, and combinations of these.

If coking coal, iron ore, and limestone are in close

THE ORIGIN OF INDUSTRIAL AREAS

proximity (*e.g.*, as at Middlesbrough), there is obviously the making of a large-scale iron industry; but such fortuitous collections are very rare, for often there is coal without enough ore, or ore without any coal. Limestone is often associated with either coal or iron ore. Hence either coal has to go to ore or *vice versa*, and as these goods are bulky the distance and the means of transport between their sources are important factors in deciding the growth of an iron industry.

Textiles

For the simplest of cottage industries in textiles all that is needed is a supply of raw material (flax, wool, cotton, or silk), water for cleansing if necessary, and nimble fingers. Man soon learned to eliminate partly the skill of the nimble hand and to quicken the operations by inventing simple machines like spinning-wheels to save the twisting of strands by hand to form thread, and looms and shuttles to speed up the darning method of weaving. Next ingeniously lazy mortals saved the labour of pedalling their machines by harnessing them to water-wheels, the most convenient wheel in the old village being the one that turned the miller's grindstones. Accordingly the looms were installed either in the old mill or in a similar building, the name 'mill' being still retained, although the factory now did no milling. The invention of the steam-engine wrought a sudden change, for an obvious use of the new power was to replace the water that turned the mill-wheel, thus obviating the inconveniences of droughts, floods, and frosts. So mills became steam-driven if coal were available for the engines. But the engines could work more looms than the water-wheel could, and so the mill was enlarged, but still on the same site; workers came from less fortunate mills without coal for engines; the workers needed houses quickly, and builders soon supplied the demand by erecting packed

A GEOGRAPHY OF EUROPE

rows of cottages; workers with steady wages attracted tradesmen; successful mills needed bankers; other industries swelled the population: and all this in the little valley, often steep-sided, that had once been the site of a chugging water-mill. The result—an 'industrial' area, with all its modern problems of overcrowding, slums, sanitation, and, to-day especially, of unemployment.

Markets

The power-driven machine, expensive to instal, is economical only when producing to full capacity. Production is essentially large scale, and two problems arise: to keep up the supply of raw materials to feed the machines, and to find markets for the huge quantities of finished goods.

Local raw materials are soon exhausted and local markets soon glutted, until eventually and always the search for markets, buying or selling, becomes very wide. In studying the geography of industrial regions it early becomes obvious that not all areas with coal and iron, with machinery, and with skilled workers, are equally favourably situated for import or export. And so the geography of one small, densely populated area becomes interwoven with the geography of a particular route and a particular harbour, the trade at the port becomes a question of world trade and empires, and the wide ramifications of commerce and its essential internationalism become inevitably a part of the geography of what seemed at first sight to be a self-contained industrial unit without any important outside connexions.

SILESIA

NOTEBOOK WORK: 25

Below is a list of the natural resources of Silesia. Rewrite the list, grouping, rearranging, and repeating where necessary,

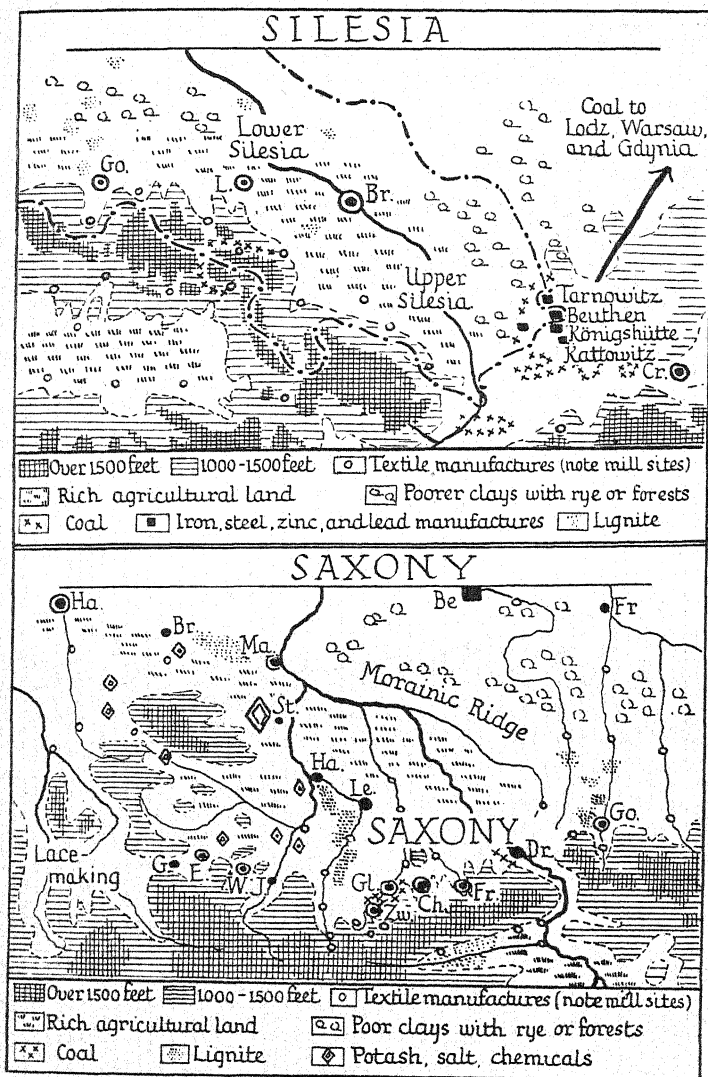


FIG. 12

A GEOGRAPHY OF EUROPE

so that consequent industries under headings 'Cottage Industries' and 'Large-scale Industries' can be set out in columns opposite their appropriate origins.

- (a) Fertile soil (loess) producing wheat, rye, potatoes, sugar-beet, flax, tobacco; rich pasture for cattle.
- (b) Forests of hard and soft woods on the lower mountain slopes.
- (c) Pasture for sheep on the upper mountain slopes.
- (d) Coal, iron-ore, salt, copper, zinc, lead.
- (e) Many mountain-torrent tributaries of the river Oder.
- (f) River Oder navigable for barges to the border of Czechoslovakia: easy communications *via* Elbe, Oder, and the Moravian Gate.

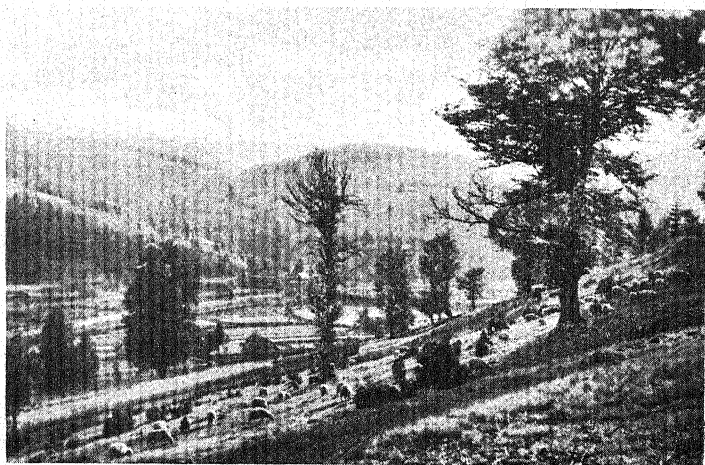
Much of Silesia is still farm-land, with crops of corn, flax, and potatoes, in a sheltered hollow between the Sudetes and the Carpathians; to north and east are less attractive lands of thicket and fen, to south and west are forested mountains; in the centre is the river Oder. Silesia is still a land mainly of little villages, each situated on its mountain stream, which supplies not only drinking water but power to turn the mill-wheel. The weaving of fine woollens and linen and the making of lace and gloves are still important cottage industries. The central market-town is the old city of Breslau. (Fig. 12.)

To-day the peasant population of Upper Silesia especially is mainly Polish, but not long ago it was definitely German. Industrialization started first in Western Germany, whither many German peasants from Silesia emigrated, attracted by the steady wages at the new factories. As these Germans left their homes in Silesia there was a steady immigration of Poles from the harsher north and east into the fertile valley, where now they form the bulk of the rural population. Soon, however, the coal and iron of Silesia caused industrialization there, the effect of which can be seen from the following figures of population in the Königshütte area: in 1780, 12,000; in 1870, 101,000; in 1910, 850,000. But the industrial develop-

ment has been confined to a comparatively small area, the remainder of Silesia being definitely agricultural;

SILESIA

even in the industrial area itself most workers own or rent little farms, which are managed largely by the women. The result is that wages at mines and factories can be very low, because the men are not relying wholly on this money to buy the necessities of life, but regard such wages rather as pocket-money with which to buy things that the smallholdings cannot produce.



IN UPPER SILESIA

Part of the valley of the Upper Vistula.

By courtesy of the Polish Embassy

The iron-foundries turn out rails, rolled goods, bars, wire, etc.—mostly heavy goods to be made up eventually into transport machinery. Breslau and Liegnitz in Lower Silesia have machine-shops, and the former town has a chemical industry. The manufacture of textiles has not been centralized, many little places along the slopes of the Sudetes making linen, and another group about the middle Oder specializing more in woollens; but Breslau has linen, woollen, and cotton mills. The glass industry,

A GEOGRAPHY OF EUROPE

which is more characteristic of Bohemia, reappears also on the Silesian side of the Sudetes in small local centres. Some small valleys have timber- and paper-mills still driven by water-power. Many of the mountain towns have a further income from German visitors either for winter sports or for cures at the spas.

The partitioning of Upper Silesia between Poland, Germany, and Czechoslovakia has destroyed the economic unity, and in any case was unjust in that the industrial area was, and is, predominantly German in population and finance. The 1921 plebiscite resulted in 59·6 per cent. of the people voting for return to Germany and 40·4 per cent. for continuation with Poland, and yet the latter country received 1250 square miles of the territory, including 890,000 of its inhabitants. Germany is pressing for a modification of the frontiers to bring German towns again under German rule and to restore the unity of the industrial area.

The region near Troppau that has been included in Czechoslovakia repeats the characteristics already mentioned—namely, the localization of industry in the town only, while the countryside remains a land of agriculture, forestry, dairying, and handicrafts. The Troppau area has a large poultry trade, geese being exported at Christmas-time even to Smithfield Market, in London.

The site of Cracow has already been considered (p. 101): the proximity of coal and of the salt-mines of Wieliczka has made the city a centre of the transport and chemical industries.

The problem of markets for the products of the Silesian heavy industries is not easy to settle; neighbouring countries are not only self-sufficing but actually compete with similar produce. Already much Swedish ore is imported to supplement local supplies, while repairs to the German steel plant, now belonging to Poland, have to be executed by Germans using German products. The by-products and chemical industries thrive, because

SAXONY

there is a large market among peasant farmers not only locally but throughout Poland.

SAXONY

Fig. 12 shows that the region to be considered in this section is more than the province of Saxony, and includes a variety of sub-regions, high or hilly, around a central 'bay' of low land with Leipzig in the middle. The region has two bituminous coalfields (one at Zwickau and the other just west of Dresden), two larger but scattered lignite-fields between Leipzig and Zwickau and between Magdeburg and Brunswick, the richest potash-deposits in the world around the Harz Mountains and especially at Stassfurt, and various ore-deposits, not so important now, in the mountains. Germany's loss of coalfields after the last war (to Poland, and owing to the French occupation of the Ruhr) has compelled the better utilization of other fuels, especially the lignite of this central region. (See the statistics at p. 138 of the production of lignite.)

CHEMNITZ

Of the subdivisions of this Saxony region the first to be considered will be the Chemnitz area, with Zwickau, Glauchau, and Freiburg, along the northern flank of the Ore Mountains (Erz Gebirge). Mountains, rain, tumbling streams, high pastures, low forests, and little valleys ought to suggest a cottage industry in woollens; the presence of good coal should suggest industrialization; and the navigable Elbe, with its estuary facing the Atlantic Ocean, should suggest the import of wool and of cotton too, if and when the latter material should become a more profitable commodity to work than wool. To-day the area manufactures cotton, linen, and woollen goods in many little towns and villages that are on the sites of old water-mills, while Chemnitz is like a central

A GEOGRAPHY OF EUROPE

Manchester, collecting the produce of the dales and supplying machinery and dyes. Taken as a whole, this region is the biggest producer of cotton goods in Germany. The cottage industries still survive in the making of lace, gloves, and hosiery.

A smaller and less important area similarly situated east of the river Elbe, on the flank of the Giant Mountains (Riesen Gebirge), has the same characteristics.

LITTLE VALLEYS—LITTLE INDUSTRIES

Small-scale industries of the cottage type are further shown in other developments round the Leipzig bay, where valley and spur alternate to form secluded settlements with clannish pride in local products. Jena, Weimar, Erfurt, and Gotha, only small towns, specialize in scientific instruments, fine printing, and optical glass, the famous Zeiss works being at Jena. The glass industry depends on the potash deposits and on the sands of the area, containing much silica and few impurities that stain glass. Other valley towns or villages make violins, mouth-organs, and musical-boxes, each locality being intensely proud and jealous of its craft. Some places carve wooden toys, or make and embroider slippers. The people of the Harz Mountains have made the breeding of canaries their own speciality. The valley farmers have specialized in the cultivation of flowers and small fruits for the markets of big German cities. Any single town is almost insignificant, any one product is almost negligible in quantity, and yet the sum-total of many little towns with their many special products makes this beautiful little land of hill and dale most important, even in world production, in its peculiar lines of goods.

POTASH

The Saale ('salty') valley industries are concerned with the potash and lignite deposits. Germany, the

SAXONY

world's leading nation in chemical industries, which depend partly on the potash deposits and partly on the by-products from blast-furnaces and coking-ovens, has had to concentrate on scientific orderliness in order to get good results from land that is not very fertile and from coalfields that are not very rich, to increase the wealth of the country and so to feed the growing population. German exports of potash in thousands of tons in 1932 were: to U.S.A., 108; to Holland, 87; to Belgium, 60; to Czechoslovakia, 48; to Great Britain, 43; and to Scandinavia, 45. Halle ('the salty town') makes glass and chemicals; smaller places in the Saale valley manufacture textiles and gloves.

LEIPZIG

The manufactures of Leipzig include scientific instruments, chemicals, pianos, paper, and leather; but these products do not suggest the real nature of the city's importance. Leipzig to-day, central in Germany but without the political and military centrality of Berlin, industrial but not upstart industrial, at a crossing of old commercial routes that have given the place a long tradition as a market, is an exhibition centre for German goods. Just as there is held an annual British Industries Fair in London and Birmingham to show to prospective customers from all over the world a complete range of British products attractively displayed and conveniently centralized, so Leipzig has a German Industries Fair. In the same connexion it has become a banking centre and one of the world's most famous towns for the printing of books, music, and commercial art. On an economic map Leipzig may be marked as an 'industrial area,' but in many respects that is misleading, as are similar markings at, for example, Dresden, Frankfort-on-Main, and Munich; in all four cities the industrial side is mainly the organization of industry, and the belching factory

A GEOGRAPHY OF EUROPE

chimneys characteristic of an industrial area are largely missing.

Dresden is a printing centre, with manufactures also of sweets, tobacco, and pianos: 'Dresden' china is made at Meissen, a little lower down the river Elbe.

Magdeburg was in 1600 one of the three largest cities



AN ELECTRIC FURNACE IN A KRUPP FACTORY AT ESSEN

By courtesy of the German State Railways

in Germany, the other two being Cologne and Munich. Its central site now might suggest a suitable capital of a united Germany, yet in its prosperous days it was not central at all but a wealthy outpost of Germany colonization spreading east and south. The decline of Magdeburg has been due to political and religious quarrels, during which near-by Berlin, outside the quarrel zone but equally central in site, grew rapidly to become a strategic capital.

THE WESTPHALIAN COALFIELD

NOTEBOOK WORK: 26

(i) Draw a section from north to south across the textile-manufacturing region of Saxony, and note the factors that originated the industry.

(ii) Draw site-maps for Dresden and Magdeburg.

THE WESTPHALIAN COALFIELD—THE RUHR

NOTEBOOK WORK: 27¹

Turn the accompanying maps, sections, tables, etc., about the Ruhr into an orderly account of this important industrial area. The first map of Fig. 13 shows the natural setting of the region before industrialization took place. The population table should be studied with reference to the second map. The map and section of the coalfield are amplified by the coal-production tables. The two lower maps of Fig. 13 refer especially to supplies of iron ore (see iron and steel tables). In a list are detailed the specialities of the produce of the Ruhr towns. The first two maps of Fig. 14 should be associated with the distribution of these commodities. The third map of Fig. 14 marks all the places mentioned in this list.

GROWTH OF POPULATION IN THE RUHR

1850	.	.	.	.	.	200,000
1870	.	.	.	.	.	500,000
1890	.	.	.	.	.	1,000,000
1910	.	.	.	.	.	2,600,000
1930	.	.	.	.	.	3,500,000

WORLD PRODUCTION OF COAL IN 1934, IN 1,000,000 TONS²

Europe (excluding U.S.S.R.)	.	.	.	.	460.0
United Kingdom	.	.	.	.	221.0
Germany	.	.	.	.	123.0
France	.	.	.	.	46.8
Poland	.	.	.	.	28.8
Belgium	.	.	.	.	26.0
U.S.A.	.	.	.	.	370.4
U.S.S.R.	.	.	.	.	92.0
Japan (1933)	.	.	.	.	32.5

¹ It is suggested that this exercise should be a geographical essay, but it can be equally valuable if done as oral composition in class.

² This table does not include lignite.

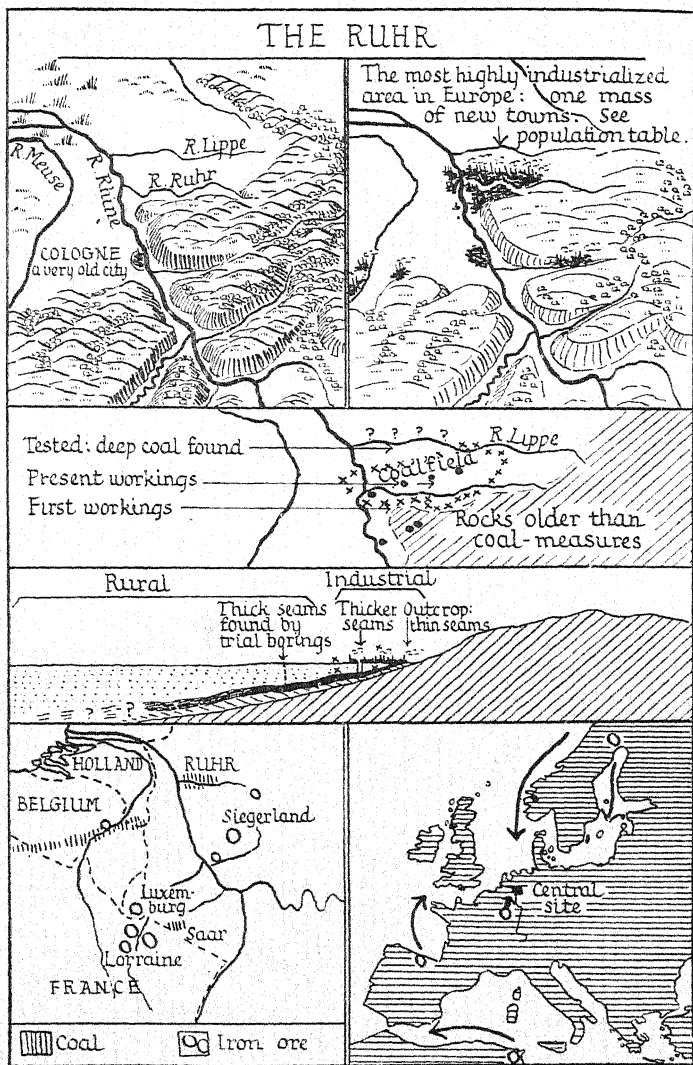


FIG. 13

THE RUHR (continued)

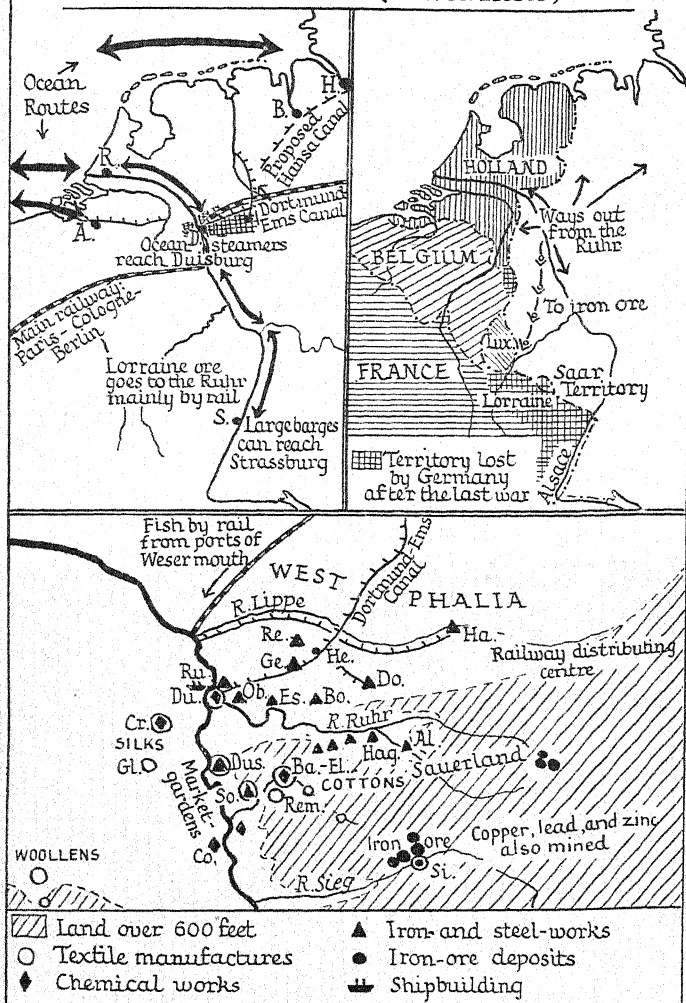


FIG. 14

A GEOGRAPHY OF EUROPE

WORLD PRODUCTION OF LIGNITE IN 1933, IN 1000 TONS

World	166,400
Germany	126,796
Czechoslovakia	15,125

WORLD PRODUCTION OF COAL IN FIRST HALF OF 1934, IN 1000 TONS

U.S.A.	191,300
Great Britain	112,000
Germany	58,800
France	23,700
Poland	13,100
Belgium	13,000
Saar	5,400

PRODUCTION OF COAL IN THE FOUR COALFIELDS OF THIS SECTION IN 1933, IN 1000 TONS

Silesia	27,300
Saxony	3,200 ¹
Ruhr (1932)	101,500 ²
{ Belgium	25,300
{ Holland	12,600
{ France	46,800 ³

EXPORTS OF RUHR COAL ⁴ IN 1932, IN 1000 TONS

Holland	4,700
France	4,100
Belgium	3,900
Italy	1,400
Czechoslovakia	1,000
Scandinavia	500

BY-PRODUCTS FROM RUHR COAL IN 1932, IN 1000 TONS

Coke	15,300
Briquettes	2,800
Tar	600
Oils	400

Also dyes, drugs, disinfectants, insecticides, photographic developers, rubber solvents, ammonia, explosives, and sulphuric acid.

¹ + 11,000 lignite. ² + 100,900 lignite in Central Prussia.

³ Including Saar and other small coalfields.

⁴ Most of the Ruhr coal is used in the furnaces and factories of the area. In the following towns more than half of the people are engaged in coal-mining: Bochum, Gelsenkirchen, Recklinghausen, Dortmund, Essen, and Hamm.

THE WESTPHALIAN COALFIELD

WORLD PRODUCTION OF IRON ORE IN 1933, IN 1000 TONS

France	30,275
U.S.A.	17,972 ¹
U.S.S.R.	14,000
United Kingdom	7,462
Luxemburg	3,370
Sweden	2,699
Spain	1,833

IRON ORE FOR RUHR FURNACES IN 1932

60 per cent. comes from foreign sources. Iron ore is imported into Germany in the following percentages of the total production of each country:

France	5
Tunis	26.5
Algeria	44.9
Sweden	39.6
Spain	25.2

WORLD PRODUCTION OF PIG-IRON AND STEEL IN 1934, IN 1,000,000 TONS

COUNTRY	PIG-IRON	STEEL
U.S.A.	15.9	26.0
U.S.S.R.	10.4	9.6
Germany	8.6	11.8
United Kingdom	6.0	8.9
France	6.0	6.0
Belgium	2.9	2.9
Luxemburg	1.9	1.9
Saar	1.8	1.9
Japan (1932)	1.0	2.4
Total	62.6	81.8

EUROPEAN PRODUCTION OF PIG-IRON IN FIRST HALF OF 1934, IN 1000 TONS

France	3,000
Germany	3,924
United Kingdom	2,898
Belgium	1,400
Luxemburg	929
Saar	780

¹ 74,200 in 1929.

A GEOGRAPHY OF EUROPE

PRODUCTION OF STEEL IN GERMANY IN 1932, IN 1000 TONS

{ Westphalia	4,600
{ Sieg and Lahn	180
{ Silesia	190
{ North-east and Central Germany	430
{ Saxony	200
{ South Germany	130

Out of 156 blast-furnaces in Germany 43 were working in 1932, 75 in 1935, mostly in the Ruhr.

SOME SPECIAL PRODUCTS OF RUHR TOWNS

Heavy Goods

Dortmund : Heavy goods (bridges, boilers).

Bochum : Largest rolling-mills in Germany.

Essen : Krupp's (most important steel-works in Europe).

Oberhausen, Gelsenkirchen, Herne (on Rhine-Herne canal) : Heavy goods.

Lighter Metal Goods

Hagen, Altona : Wire, nails, bolts.

Remscheid : Electrical apparatus.

Solingen : Sheffield ware.

Textiles

Barmen-Elberfeld : Cottons, woollens.

Crefeld : Silks, velvets.

Gladbach : Silks, cottons.

Transport

Duisburg : Biggest river-port in Europe.

Hamm : Railway distributing centre from Ruhr to rest of Germany (railways carry much more than canals—80 per cent. and 12 per cent. respectively).

Cologne : Dyes, textiles, glass, leather, sweets, scent. See also p. 167.

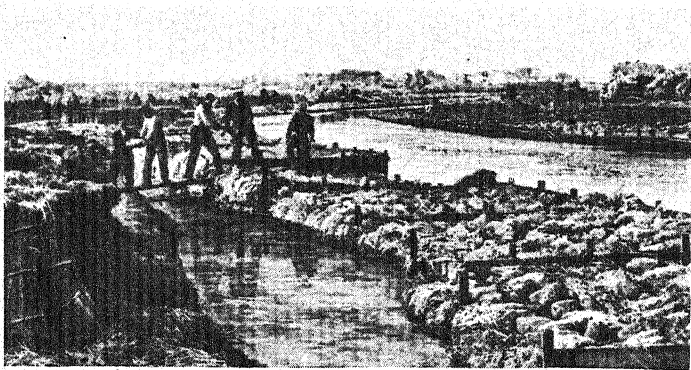
Ruhr towns are so closely packed that there is little or no open country between them. Where is the nearest farm-land to supply milk and vegetables? Whence does fresh fish come? Where are the nearest open spaces suitable for holidays for the town-dwellers?

GERMAN COALFIELDS

The three big industrial areas so far considered were all in Germany in 1914. After the War most of the Silesian

GERMAN COALFIELDS

coalfield was ceded to Poland, and in 1923-24 the French temporarily seized the Ruhr. The economic effect of these combined losses, together with the payment of reparations, can well be imagined. The result has been a greater concentration in the central (Saxony) industrial region, removed from the disastrous quarrels and ill-feeling on the eastern and western frontiers. Central Germany has



RETTING FLAX ON THE BANKS OF THE RIVER LYS

The stalks are soaked and 'rotted' so that the fleshy part can be easily scraped off, leaving only the tough, fibrous skeletons of the plants.

Photo E.N.A.

the advantages of the coal of Saxony, the lignite of the middle Elbe and Oder, the potash of Stassfurt, the metals of the Harz Mountains, and proximity to Berlin. The area from Dresden, through Chemnitz, Leipzig, and Magdeburg, to Hanover has suffered much less in the recent depression than the two other coalfields.

Section II described a lowland Germany of the north. Section III has so far described three coalfields in 'middle' Germany—*i.e.*, between lowland north and highland south. These coalfields do not add largely to the area of the Germany that we are slowly piecing together, but they have added enormously to the wealth and population.

A GEOGRAPHY OF EUROPE

Southern Germany is quite a distinctive set of regions, the study of which will be deferred to Section IV. For the present the geography of the 'middle' lands will be continued westward and southward, because the same story of industrialization is repeated, and it is as well to consider such regions as one geological and geographical group.



A FARM BEHIND THE DUNES OF THE BELGIAN COAST, NOT FAR
FROM ZEEBRUGGE

The picture shows at least one 'money-crop' for this peasant. See also
the peasant farms on pp. 49, 58, and 143.

By courtesy of the Belgium-Luxembourg Touring Office

THE FRANCO-BELGIAN COALFIELD

NOTEBOOK WORK: 28

[The exercises about the Ruhr consisted of turning a series of maps, etc., into orderly notes. The following exercises about the Franco-Belgian coalfield consist of turning notes into maps. Let each map aim at illustrating one main idea. If a map,

THE FRANCO-BELGIAN COALFIELD

complete with a good title and a key, is not sufficiently illustrative in itself, then a note must be added.]

The coalfield to be studied lies along the western flank of the Ardennes in the Meuse-Sambre valley. The industrial regions are in three countries: (a) mainly in Belgium, (b) a very important area in France, and (c) a much smaller unit in Holland.



A PEASANT HOME IN THE ARDENNES

By courtesy of the Belgium-Luxembourg Touring Office

(i) Draw a map to show the natural setting of the region before industrialization occurred. Trace from the atlas the coast-line from Emden to the mouth of the river Seine, the river Rhine as far upstream as Mainz (Mayence), the river Moselle to Metz, the river Meuse (Maas) to Verdun, the river Sambre (tributary to the Meuse), and the rivers Scheldt and Lys, of the Belgian Plain. Add next the highlands in the south-east of the area, showing the steep cliff that drops to the Meuse in Belgium, the Rhine gorge between Cologne and Mainz, and the Meuse and Moselle gorges. Mark an arc of chalk hills from Calais through Arras to Reims (Fig. 19 will be helpful). Next show the different kinds of lowlands: (a) the

A GEOGRAPHY OF EUROPE

land below sea-level in Holland; (b) the poor, morainic heath-lands (i) along the Dutch-German border, (ii) between Utrecht and Arnhem, and (iii) along the border between Holland and Belgium, from Antwerp due east; and (c) a narrow line of dunes along the North Sea coast of both Holland and Belgium. Finally add the signs for deciduous forests on the Ardennes.



A PART OF THE ARDENNES WITHIN EASY REACH OF SPA

Compare this view with that of the Black Forest at p. 169.

By courtesy of the Belgium-Luxembourg Touring Office

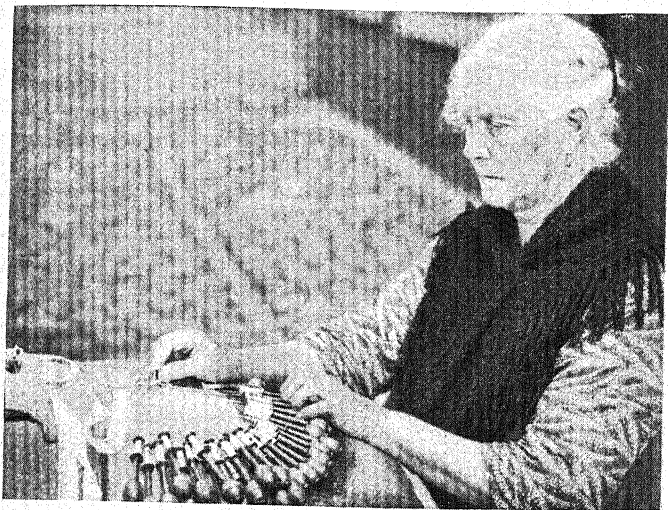
(ii) Draw a diagrammatic section from west to east across Belgium to show the following natural regions: (a) a sandy coast-land with a shallow sea; (b) a narrow line of sand-dunes immediately behind the coast; (c) a central plain; (d) a narrow region at the foot of the Ardennes where coal outcrops; (e) the limestone cliffs sheer to the river Meuse; and (f) the Ardennes plateau with volcanic intrusions.

Above each region write brief notes on characteristic occupations—e.g., for (a) fishing, catering for holiday-makers, work

THE FRANCO-BELGIAN COALFIELD

at ports; for (c) farming, with crops of rye, potatoes, oats, barley, sugar-beet, and flax; for (d) mining; for (f) lumbering in the forests, herding on the heaths, and farming in the little valleys.

(iii) On a map of Holland and Belgium mark and name the towns mentioned in the following historical notes, and make a summary of the latter.



A LACE-MAKER, NEAR BRUGES

In many parts of Europe cottage crafts (linen, wool, leather, timber, etc.) hold their own against factory competition, partly because of unique qualities in the hand-made articles, but mainly because the makers are peasants who do not rely on the sale of the products for a living, but use it to buy a few luxuries that their little farms cannot produce. See also the illustration at p. 283.

By courtesy of the Belgium-Luxembourg Touring Office

THE OLD PROSPERITY OF FLANDERS

Economic, artistic, and political splendour in fifteenth century; woollen industry; belfries, cloth-halls, town-halls, cathedrals; raw wool from England; mutual prosperity. Revolution of Flemings against their Spanish rulers in sixteenth century; war; decline of prosperity; Flemish weavers flee to England.

A GEOGRAPHY OF EUROPE

Bruges ('the bridge'). Important as early as seventh century; capital of Flanders in twelfth century; counterpart of Venice for North-western Europe; trade and financial centre; ruined by the silting of the little river Zwyn.

Ghent. Rival of Bruges in fifteenth century; population then 250,000; population in 1932, 280,000.

Brussels. In fifteenth century only one-fifth of the size of Ghent.

Liège. Intellectual centre in fourteenth, fifteenth, and sixteenth centuries.

Antwerp. Population more than doubled during the fifteenth century; when Bruges declined as a port Antwerp grew; decline of Antwerp due to silting of Scheldt.

Amsterdam. Rose to prosperity in sixteenth century, when refugees from Flanders established their cloth trade; triumphed over Antwerp as a port when Scheldt silted.

(iv) Draw a map to show the present centres of the textile industry, the origin of which is discussed in the note to Exercise (iii).

—	LINEN	COTTONS	WOOLLENS	LACE	SILK
BELGIUM	Brussels Ghent Bruges	Brussels Ghent	Brussels ¹ Bruges	Ghent Bruges Antwerp	Brussels ² Antwerp
	Antwerp Malines Louvain Courtrai Ypres Tournai	Antwerp Malines Courtrai Tournai	Malines Courtrai Tournai	Louvain Courtrai Ypres	
FRANCE	Lille	Roubaix Tourcoing	Roubaix Tourcoing Cambrai Arras		
	Cambrai ²			Valenciennes	
HOLLAND			Maastricht		

Local supplies of wool are now quite inadequate, much being imported from Argentina. Raw cotton comes mainly from the United States. Flax is still home-grown, Courtrai flax being the

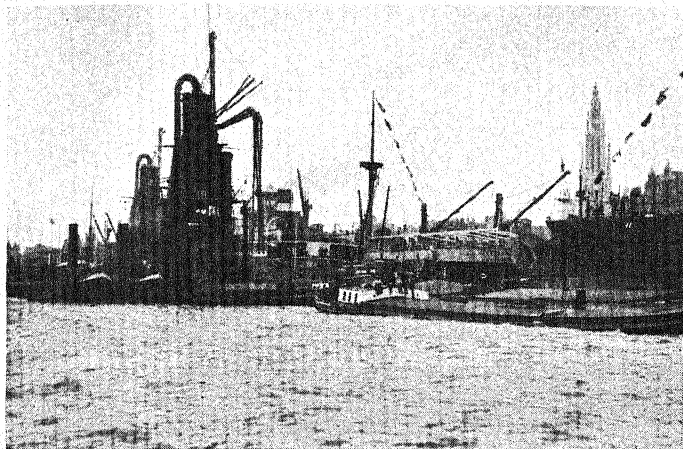
¹ Carpets.

² Cambric.

THE FRANCO-BELGIAN COALFIELD

finest in the world because of the special retting qualities of the water of the river Lys. Antwerp is the importing port for Belgium, Rouen and Dunkirk for France (see also pp. 238, 244).

Of the towns in the preceding table only Valenciennes and Maastricht are actually on the coalfield, but mills in the other places are all close to supplies of fuel. Cottage industries (not detailed in the table) are widespread over the Belgian Plain.



PART OF THE DOCKS AT ANTWERP

By courtesy of the Belgian National Railways

Belgium is the most densely populated country in Europe, the greatest density occurring, not on the coalfield as one would expect, but in the central plain, where villages and little towns are closely clustered round Brussels.

(v) Draw a map to show the extent of the coalfield and of the iron and steel industries. Show first the Ardennes and the Sambre-Meuse valley. The coalfield is divided into two portions: (a) from Maastricht ('Meuse-crossing') along the Meuse and Sambre valleys in a narrow belt, and then westward towards Calais (see Figs. 19, 21), the coal-seams dipping sharply before reaching the coast, and ending as a workable area just south of Lille (the same belt of coal is mined across the Strait of Dover in Kent); (b) the Campine field between

A GEOGRAPHY OF EUROPE

Maastricht and Antwerp, worked only in the centre, where production is comparatively small.

The following towns on the coalfield have iron- and steel-works: Liège, Namur, Charleroi, Mons, and Douai. The next list of towns also with iron and steel manufactures consists of places not on the coalfield, but relying on the coalfield towns for raw materials: Brussels, Antwerp, Ghent, and Lille. Both Liège and Antwerp have important motor-works (Excelsior, Imperia, and Minerva).

Mark the boundaries of France, Belgium, Holland, Germany, and Luxemburg.

Local supplies of iron-ore in Belgium are almost worked out, ores from Luxemburg, Lorraine, Sweden, and Spain being imported.

Zinc manufactures (galvanized iron, brass, paints, etc.) and glass (plate and mirror) are special products of the Belgian coalfield region. Local supplies of zinc are now supplemented by large imports from Australia (Broken Hill).

The manufactures at Antwerp depend partly on local produce (e.g., linen and lace), partly on the town's position as a port (ship-building), partly on its world trade as a port (tobacco factories, cotton-mills, sugar-refineries, rubber-works), and partly on the international outlook and the population of traders of mixed nationalities (diamond-cutting).

In world markets Belgian manufactures are at an advantage on account of their cheapness, which is due mainly to peculiar economic conditions of the miners and iron-workers. These people are nearly all smallholders too, wages at the pit or foundry being regarded as extra earnings to eke out the produce of the little farms. As a result wages are very low, and so are the costs of production at the works. Recent industrial unrest on the Belgian coalfield is an agitation by the workers for better conditions.

(vi) Draw a map to show the ports and outports of this area. (a) Mark the big ocean-ports—Antwerp, Rotterdam, Amsterdam, Rouen, and Duisburg. The first four have steamship services on Atlantic, Pacific, and Indian Ocean routes. The number of vessels entering the four harbours in 1933 was: Rotterdam, 7851; Antwerp, 11,166; Amsterdam, 2823; Rouen, 4090. Compare these with Hamburg's 16,570, Bremen's 5651, Stettin's 4282, and Lübeck's 3412. Show the comparative importance of the four ports with arrows pointing at them from the ocean, the number of barbs to the arrows

BELGIUM

corresponding to thousands of ships entering. (b) Mark those ports situated as far out to sea as possible, often with artificial harbours—the Hook, Flushing, Zeebrugge, Ostend, Dunkirk (Dunkerque), Calais, Boulogne, Dieppe, and Le Havre. Quick rail connexions inland are an important factor in the passenger traffic of these ports. (c) Mark the air-ports in which recent development has been very rapid—Brussels, Amsterdam, and Cologne.

Write a note on the political problem of the navigation of the Scheldt, explaining how Antwerp's sea-approach is *via* a river-mouth belonging to Holland.

BELGIUM

The foregoing exercises leave little to be added to the geography of Belgium except from a political point of view. The Belgians themselves are not one people but two—the French-speaking Walloons of the south and west, and the Flemings, speaking a language akin to Dutch, of the north and east. Both peoples are Roman Catholic. The position of the whole country of Belgium is, however, of far more political importance than internal racial differences. The central site between France, Holland, Germany, and Britain has advantages only if these neighbours do not quarrel with each other: when such quarrels do occur—and they have been all too frequent—the antagonists are apt to come to blows, and the arena is unfortunate Belgium. The history of the country is a story of alternate splendour and disaster, of wealth in peace-time and ruin in other peoples' wars. Here in Belgium the Great European Plain is at its narrowest, the 'gate' forming an inevitable focus of movement. The last war saw the same route used yet again when Germany marched through Belgium in an attempt to capture the Narrow Seas and isolate France from Britain. A buffer-state like Belgium must be neutral, otherwise it ceases to be a buffer; and nations separated by the buffer must respect the neutrality, which exists wholly in their interest.

A GEOGRAPHY OF EUROPE

Since the War Belgium has recovered rapidly. An era of peace should add further wealth, to which the progressive development of her Congo territory should make substantial increase.

SOME STATISTICS ABOUT BELGIUM

IMPORTS IN 1934, IN PERCENTAGES OF TOTAL VALUE

Foodstuffs	21
Raw materials	49
Manufactures	28

EXPORTS IN 1934, IN PERCENTAGES OF TOTAL VALUE

Manufactures	54
Raw materials	39
Foodstuffs	6

NUMBERS ENGAGED IN CERTAIN OCCUPATIONS IN 1930

Agriculture (1920)	613,600
Industry	1,938,118
Commerce	564,577

EXPORTS FROM BELGIUM TO THE UNITED KINGDOM IN 1933, IN PERCENTAGES OF TOTAL VALUE

Iron and steel (bars, billets, etc.)	9·4
Glass	8·5
Cotton goods	2·6
Zinc manufactures	2·2
Cement	·8

EXPORTS FROM THE BELGIAN CONGO IN 1933, IN MILLIONS OF FRANCS

Gold	179
Palm-nuts and palm-oil	133
Copper	102
Cotton	60
Diamonds	58

LUXEMBURG

Luxemburg is an independent duchy, but united economically to Belgium since 1921. About two-thirds of the population are engaged at the large iron-ore quarries or at blast-furnaces and steel-works.

SECTION IV

THE BASIN OF THE RHINE

BETWEEN the North German and the Belgian Plains, both of which have now been described, there is the country of Holland, the Kingdom of the Netherlands, also a part of the Great European Plain. Since much of the importance of Holland depends on its site at the delta of the river Rhine, the whole of the basin of this river forms the basis of this section. Fig. 15 shows diagrammatically the main structural regions of the basin: (*a*) the lowlands of the lower Rhine; (*b*) the block of Lower Rhine Highlands, split into four by river gorges; (*c*) the Rift Valley; and (*d*) the Swiss Alpine region. In addition to these, a varied region which has been called "Between German Alps and German Plain" will be described, although it is only partly within the Rhine basin.

NOTEBOOK WORK: 29

Trace from an atlas three outline maps of the Rhine basin.

(i) Turn the first of these into a map showing structure. Mark and name the following rivers: Lippe, Ruhr, Lahn, Moselle, Main, and Neckar. Show also the river Meuse on the west, the upper Danube and the river Inn in the south-east, and the upper Rhône in the south. Shade (*a*) the four sections of the old block of Lower Rhine Highlands—Eifel, Westerwald, Hunsrück, and Taunus; (*b*) the two horsts (*i.e.*, upstanding portions) of the Rhine Rift Valley—the Vosges and the Black Forest—with hachures to indicate the inward-facing scarps. Mark with a different shading the Alps, folded against these old blocks—(*a*) the inner Alps, the northern boundary of which is the line of the upper Rhône, upper Rhine, and Inn; (*b*) the outer Alps, the northern boundary of which is marked by the line of Swiss lakes between Lakes

A GEOGRAPHY OF EUROPE

Geneva and Constance. (The southern boundaries of the Alps do not concern this map.) Mark with simple curves the symmetrical folds of the Juras, the southern boundary of which is shown by the river Aar. Show with dots the 'foreland' between the Alps and the Juras, and its continuation eastward towards Munich. Add a careful key to the shadings.

(ii) In the second outline map repeat the previous exercise, but without writing in the names of physical features. Divide the Rhine basin into what you think are the main natural regions. Mark their boundaries carefully, and explain in your key any places where regional limits are not easy to decide.

(iii) In the third outline repeat the map again without names, and add prominently the boundaries of states.

THE NETHERLANDS

[Holland is being considered first of the Rhine regions in order to continue the geography of the European plain. The other regions will be described in their order upstream to complete the geography of Germany. Switzerland will be considered as the last unit. Fig. 1 should be consulted again to see how Sections II, III, IV, V, and VI are becoming interwoven.]

LIMITED RESOURCES

Holland is only a little state, but it is a very crowded land. To understand its geography one has to try to forget temporarily the general impression of a country of fat cattle, red cheeses, dreamy windmills, lazy canals, willows and poplars, quaint costumes, skating couples, beautiful tiles, clever modern brick architecture, gaudy bulb-fields, neat pottery, and homely 'holland'—all of which certainly contain hints of the geography of the land, but which neglect consideration of the very limited natural resources. There was little in the primitive setting to encourage man to stay there at all. It might be said that the chief characteristic of the land is the water! There are seas around and within, and the land itself is a wet

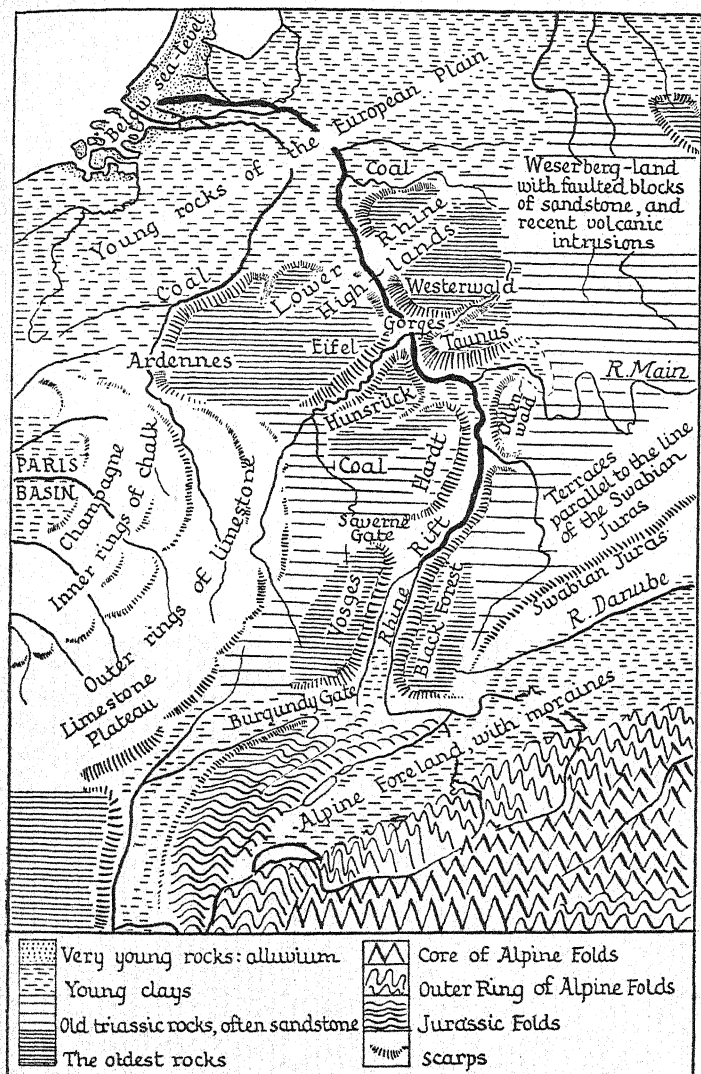


FIG. 15. THE STRUCTURE OF THE RHINE BASIN

A GEOGRAPHY OF EUROPE

hollow across which rivers drag their dying courses within high embankments. In the east the country is slightly higher, but there it consists of unattractive moorland, peaty hollows, and even sandy wastes.

The poverty of the fjords drove the Norsemen to sea for a living—first as fishermen, then as pirates and adventurers, later as explorers and colonizers, and finally as merchant-seamen—and the same story can be told of Holland. A land of dune, morass, and moor compelled its people to search for better places. The Dutch East Indies are only a remnant of much larger territories discovered or acquired by the Dutch during the seventeenth century especially, when they were the leading sea-power of the world. Names like Roosevelt, Vanderbilt, Rip Van Winkle, Smuts, Hertzog, Vaal, Johannesburg, New Zealand, Tasmania, Leeuwin, Batavia, etc., are reminders of the distant settlements, explorations, and trading activities at Holland's zenith of power. And much of the prosperity of Holland to-day is due to her East Indian possessions and to her merchant fleet.

This prosperity is further increased by Holland's position in Europe. As the land of the Rhine mouth her hinterland is the Rhine basin; but it will be shown later that the Rhine itself is the main north-south highroad of Europe, and that this route attracts to itself side-traffic from far outside the basin proper; so the hinterland of Holland is not merely the Rhinelands, but a great part of central, north central, and even Mediterranean Europe.

These two aspects—wealth from colonial trade and shipping and from centrality of site in Western Europe—are illustrated in the following table.

NOTEBOOK WORK: 30

Copy the list of commodities (without values) noted in the table opposite, and in two columns state whence you think the imports mainly come and whither the exports mainly go.

THE NETHERLANDS

DUTCH TRADE IN 1934, IN MILLIONS OF GUILDERS

COMMODITY	IMPORTS	EXPORTS	—
Gold and silver . . .	132	305	} Examples of <i>entrepôt</i> trade
Textiles	149	62	
Coal	43	43	
Rice	9	8	
Sugar	4	4	
Skins	15	11	
Paper	22	21	
Zinc	1	2.5	
Colours	10	8	
Oil-seeds	29	10	
Manures	24	18	
Rice	9	8	} Examples of colonial trade
Petroleum	24	1	
Coffee	16	4	
Sugar	4	4	
Tobacco	19	1	
Oil-seeds	29	10	
Butter	0	22	} Examples of home produce
Cheese	0	28	
Cereals	72	9	} Examples of large imports, small re- exports—foreign trade (not colonial)
Iron and steel	81	20	
Wood	57	2	

HOLLAND: THE WATER

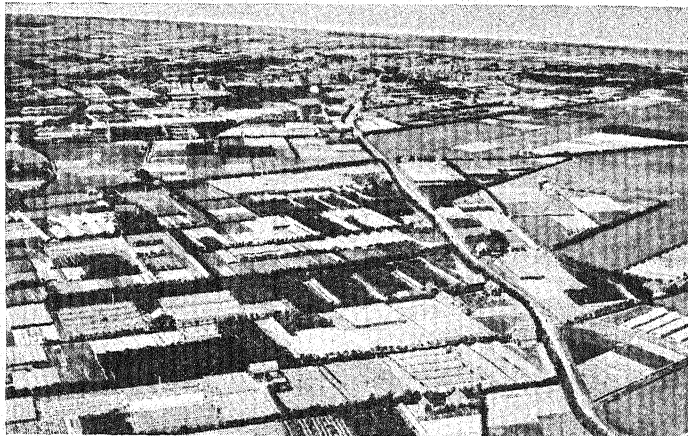
Holland may well be divided into two regions—land and water. The water region is subdivided into two—sea and river; the sea region, again, into two—the open North Sea and the Zuider Zee; and the river region also into two—delta and river-channels.

The land has three distinctive regions—the line of coastal dunes (which must be associated with the open North Sea region), the land below sea-level (which must be linked partly to the two river regions), and the land of Eastern Holland, above sea-level.

A GEOGRAPHY OF EUROPE

NOTEBOOK WORK: 31

Draw a section across Holland from west to east through Amsterdam to show (a) the shallow North Sea; (b) the sandy coast, backed by (c) the dunes; (d) the land behind the dunes, well below sea-level; (e) the dike between (d) and the very shallow Zuider Zee (f); and (g) the low, hummocky moorland (above sea-level) of Eastern Holland.



INTENSIVE AGRICULTURE AND HORTICULTURE ON POLDER-LAND
BEHIND THE DUTCH DUNES

Notice the large number of glass-houses, providing an artificial climate for the production of tomatoes particularly.

Photo E.N.A.

The line of dunes along the coasts of Holland and Belgium has been raised from the sea-floor; the original smooth curves of the dune-line are marked by the seaward edges of the Frisian Islands, the straight portion of the Dutch coast, the outer rim of the delta, and the straight Belgian coast. Storms, submergence, and river-action have broken the symmetry of the two sweeping curves. (In drawing a memory map of Holland begin by putting in lightly these smooth curves of the former coast, and within them mark the inundations.) The formation of

THE NETHERLANDS

the dunes enclosed a lagoon, which, however, soon began to fill with river deposits and wind-blown sand. When in course of time the lagoon became very shallow the rivers built for themselves mud channels straight across it, and these 'levees' soon so limited the flow of water between them that only in floods did the lagoon itself continue to receive a supply of water from the rivers. In consequence the lagoon partially dried as a morass: its water-level was, of course, sea-level, and therefore its bed was below sea-level. At this stage of partial morass and partial lagoon man started reclamation by strengthening the levees to prevent leakage, raising them against floods, planting the sand-dunes with grasses to lessen landward encroachment, diking areas of morass and pumping them dry.

The people of the dune coast were fishermen first, and fishing is still very important. The present centre of the Dutch North Sea herring-fisheries is IJmuiden; the Frisian Islanders fish the shallow inundations behind their islands for dabs and anchovies; the fishermen of the delta breed oysters in the muddy channels between the islands. There are two Dutch ports, the Hook and Flushing, situated on the two seaward corners of the triangle of the delta. Scheveningen is a fashionable seaside resort close to The Hague.

The Zuider Zee is the result of inundations after a series of violent storms in the thirteenth century. To-day work is well advanced on the reclamation of the area. A main dike has been built from North Holland to Friesland to 'impolder' the shallow sea, secondary dikes being built to enclose small lakes from which the water is then pumped. By 1939 it is expected that over 500,000 acres will have been reclaimed. The Zuider Zee is now no longer 'Zee,' but is Lake Yssel. The sea-floor, after poldering, needs careful preparation before it is fit for crops, but already the first big completed polder—i.e., a drained meadow—has yielded fine harvests of rye.

A GEOGRAPHY OF EUROPE

HOLLAND: THE LAND

Between the coastal dunes and the Zuider Zee, with a southern extension through the Rhine delta, is the largest area of polder-land in Holland. The polders vary in the quality of their soils, containing river clays, sea clays, and also morainic clays. Ceaseless care, constant pumping, methodical cultivation, and scientific manuring have turned the area into some of the most intensively farmed land in the world. Generally all the farms are small, the larger ones on maritime clays growing rye, potatoes, and beet, the smaller and far more numerous ones specializing in intensive dairying. Five million acres of land support two and a half million cattle, more than half of which are milch-cows, and two million pigs, and nowhere else in the world is the quality of stock so consistently good. Cheese is a speciality of the north (Alkmaar and Edam), butter of polders east of the Zuider Zee, and fresh milk of the south—*i.e.*, nearer to the big towns and big ports. The garden industry is situated just in the lee of the dunes, where the light, sandy soil facilitates spade cultivation. The south is the area of vegetables, and the north of bulbs, both of which products rely for their markets largely on Britain. Local clays provide material for the pottery- and tile-works of Delft.

As in the case of Denmark, the industrialization of Britain encouraged specialization of dairying in Holland, and intensification of dairying has led to neglect of home production of cereals for human food, and concentration on production of fodder past the point where the land can supply the needs, so that there is now a large import of bread-food for the people and fattening-cake for cattle. The interweaving of world trade is well illustrated in the cases of Britain and Holland. The former specializes in machinery, and has to import raw material for the machines to work and bread and butter; the latter specializes in the butter and cheese that the former lacks, but has to import

THE NETHERLANDS

bread and raw material (in the shape of 'cake') for the cattle. The bread and cattle-cake—*e.g.*, linseed—may come from Argentina, which in its turn needs manufactured goods that Britain can supply.

The Delta

The delta is a combination of the North Sea coastal region and the polder-lands of the previous paragraphs, with the added influence of a network of embanked rivers, the lower Rhine and Maas, with their distributaries, and the Scheldt. A delta is formed of a river's load of mud, deposited at the mouth, where its entrance into sea or lake rapidly reduces the speed of the river to nothing, so that it has no power to carry the load any farther. River-mouths are freed from such accumulations only when there is some current to remove the deposit, the tide being the strongest scouring agent. The effects of the tidal wave are most conspicuous when shallowness of sea and special coastal formations combine to exaggerate the wave and concentrate its force. An estuary admits the tidal wave, but the funnel-shape of its coast automatically heaps up the incoming water. When this is released by the turn of the tide, and when in consequence the pent-up river-water is also freed, the result is a vigorous flush which sweeps seaward the river's deposited mud. Thus rivers that flow into lakes or into land-locked seas that are almost lakes usually have deltas, because there is not enough tidal current to remove the deposits; but rivers with lowland mouths on the shallows of continental shelves where tides are most marked ought to be free from deltaic deposits. In general this is true of river-mouths round the North Sea, except for the mouth of the largest and most important river of them all—the Rhine, which happens to reach the sea at a point where tidal action is at a minimum. Two tidal waves enter the North Sea, one from the north and one from the south,

A GEOGRAPHY OF EUROPE

the crest of the one wave coinciding with the trough of the other at the Rhine mouth. Hence this large river, with its enormous load of silt, lacks a tidal flush, and so has a large delta. The three corners of the Δ formation are marked by the sides of the Hook, Flushing, and Dordrecht.

EASTERN HOLLAND

Eastern Holland presents a different setting. Here is a land of heather and rills, of peaty moorlands, of crisp pasture, of sheep, of woodlands in favoured hollows; a land more typical of the North German Plain, with its moraines of rock or clay; a land so different from the polder-lands that one part is named Veluwe ('bad land'), as distinct from Betuwe ('good land'), the name of one region in the polders. Eastern Holland is further subdivided into natural regions. North-east of the Zuider Zee is a fisherman's land, with smaller polder areas on the mainland; eastward is heath-land; south-eastward is a more fertile country with sugar-beet farms taking the place of the lonely sheep-lands; finally, in the far south-east, the boundary of Holland kinks sharply southward to Maastricht, to include in Dutch territory one small portion of the coalfield belt (p. 147).

NOTEBOOK WORK: 32

(i) Draw a map of Holland and mark the boundary. Show (a) the dune-line, (b) the lands below sea-level, (c) the eastern heaths towards the *Geest* of the German border, (d) the more fertile plain between the Zuider Zee and the rivers Vaal and Lek, (e) industrial Maastricht, and (f) the infertile heath along the Belgian border from the mouth of the river Scheldt due eastward as far as the river Maas.

(ii) Draw a map of Holland and distinguish (a) the highly developed agricultural and dairying lands, and (b) the poorer pastoral lands. Mark the following towns and regions, with their special farm-products: Haarlem (bulbs), Gröningen (cheese and flax), Alkmaar (cheese), Zeeland (vegetables),

THE NETHERLANDS

south and south-west of the Zuider Zee (sugar-beet), the heath-lands (honey and sheep).

(iii) Draw a map of Holland and mark the following industrial products, distinguishing between those dependent on home produce and those dependent on colonial imports: tobacco, chocolate, sugar, beer, linen, and cut diamonds (at Amsterdam); ships, tobacco, sugar, rubber, and linen (at Rotterdam); iron and steel (at Maastricht); carpets (at Deventer); woollens (at Utrecht and Tilburg); cottons (at Enschede—almost on the German border, west of Osnabrück); pottery (at Delft).

TOWN-SITES

The sandy North Sea coast attracted early fishermen, but exposure to Viking raiders must have tended always to restrict the growth of such settlements and to compel a search for less defenceless sites. Three types of protected sites were near to the coast—(a) in the delta, (b) up the big rivers, and (c) on the landward side of the original lagoon, or, later, on the Zuider Zee. Dordrecht, at the inland point of the deltaic triangle, was once the largest town and the capital of Holland. The site was safe from surprise attack, but navigation of the shoal channels of the delta was dangerous. The Zuider Zee coast (or the inner lagoon coast) also offered sheltered sites, the shallowness of the waters being no disadvantage in the days of small ships. Amsterdam, a settlement of the marshy inner coast, a city built on piles and further protected by a moat, had the advantages of freedom from attack and from storms on the open sea and of ready access to river delta and North Sea regions on its south and east respectively; but the approach to the port was circuitous.

Rotterdam and Leyden grew up between the coast, the delta, and the Zuider Zee, using river-sites on the two branches of the lower Rhine, far enough upstream to be secure from surprise, not too far up for the waters to be

A GEOGRAPHY OF EUROPE

shallow, and near enough to the coast to attract traffic from the open sea. The Old Rhine through Leyden eventually silted up, and Rotterdam soon outrivalled Dordrecht and Amsterdam. When the day of the big steel ship arrived the Zuider Zee was too shallow, and so a canal was built to give Amsterdam a deep-water channel to the North Sea. The waterway from Rotterdam to the sea had also to be widened and deepened. It was then that Rotterdam as a port gained rapidly on Amsterdam.

NOTEBOOK WORK: 33

Classify Dutch ports into (a) North Sea ports—(i) fishing ports, (ii) ports of call for mail-steamers—(b) Zuider Zee ports, (c) delta ports, and (d) river-ports.

The ports are the largest towns in Holland. Towns which are not or have not been ports can be classified into two groups—(a) those associated with the polderland, and (b) those of the east and south-east. The polders themselves have no large towns, the big settlements being mainly on the eastern or western edges of the land below sea-level. The Hague and Haarlem are examples of towns sheltered behind the coastal dunes; Utrecht is an old fortress-city guarding the centre of the only landward approach to the polders from the east. Gröningen and Zwolle correspond in respect of site to Utrecht, but without any strategic significance. A town like Delft, actually in the polders, is on a slight hummock above the surrounding lowlands.

In Eastern Holland, in the area that is not impoldered, Arnhem and Zutphen are river-sites overshadowed in importance by Rotterdam and Amsterdam respectively. Maastricht owes its present importance not so much to the 'Maas-crossing' of its original site as to the modern development of its coalfield. Enschede, with its cotton-mills, is a new town, more characteristic of Northern Germany than of Holland.

THE GERMAN RHINELANDS

THE GERMAN RHINELANDS

THE LOWER RHINE PLAIN IN GERMANY

Holland is not the whole of the plain of the lower Rhine. Between the Dutch eastern border and the north edge of the Lower Rhine Highlands is a wide stretch of the German plain. It is a farm-land of rye, sugar-beet, and tobacco, but much of the farming is influenced by the proximity of the huge population of the Ruhr coalfield, whither market-gardeners send enormous quantities of fresh vegetables and small fruits. The most intensive cultivation of this type is between the confluence of the river Lippe and Cologne.

THE LOWER RHINE HIGHLANDS

The next natural region upstream after the plain is the 'middle land' of the Ruhr coalfield lying between the young rocks of the northern plain and the old rocks of the Lower Rhine Highlands. This coalfield has already been dealt with (pp. 135-140).

The block of the Lower Rhine Highlands is cut into four by the gorges of the Rhine, Moselle, and Lahn. The four portions associated with the Rhine basin are the Eifel and Hunsrück on the left bank and the Westerwald and Taunus on the right. With the Ardennes, to the west, the area forms a geological unit of old rocks with volcanic intrusions in all four of the Rhenish blocks. On the north and south flanks coal outcrops, in the Ruhr and Franco-Belgian coalfields and in the Saar respectively. To west and east the blocks are covered by layers of younger rocks—the limestones, chalks, and clays of the Paris basin, and the sandstones of the upper Weser, where also recent volcanic intrusions occur; but the old block reappears in Brittany, on the one side, and in Bohemia, on the other.

The Lower Rhine Highlands themselves are generally

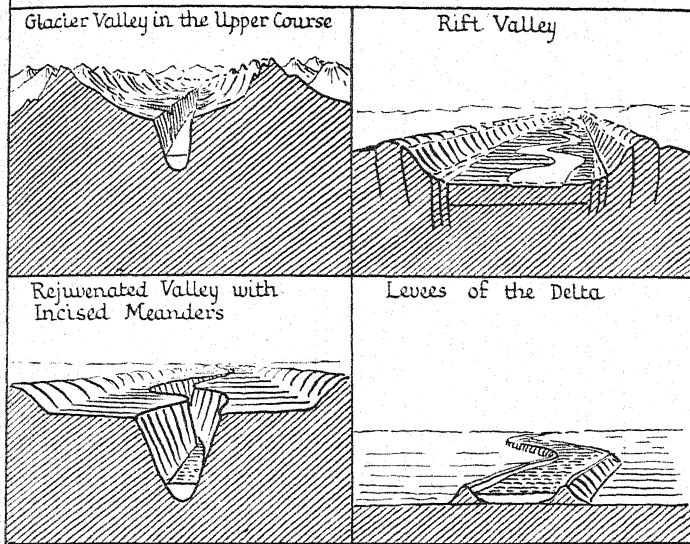
A GEOGRAPHY OF EUROPE

areas of sparse population. The rocks are hard and the soil is thin; some parts are covered with heath where sheep are pastured (their wool still partly supplying the mills on the edges of the hills), while other areas have mixed forests. Everywhere the scenery of the gorges, the woods, and the moors attracts holiday-makers from neighbouring large industrial towns and tourists from farther afield. Around the edges of the blocks many towns have become famous through the curative properties of their mineral springs, the hot springs being associated with the dying volcanic activity of the region. Spa, in Belgium, Aachen, on the north edge of the Eifel, and Wiesbaden, on the south edge of the Taunus, are the largest of these health resorts, but there are many smaller spas, all in beautiful settings of forest, gorge, and mountain.

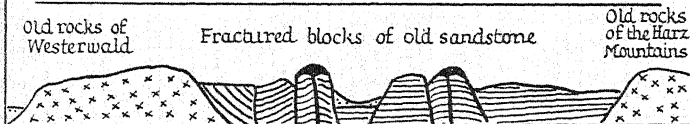
Mineral deposits are frequently associated with old mountain-blocks. The Malmedy district, ceded to Belgium after the last war, has important copper- and lead-mines; Siegerland has deposits of iron ore, owned by the steel syndicates of the Ruhr. On account of the inferior quality of this ore it has previously been neglected, but Germany's loss of Lorraine has compelled her to make fuller use of home-supplies of ore, and Siegerland is now producing much more than for many years past.

The greatest density of population in the area occurs not on the uplands, but in the gorges of the rivers, especially of the Rhine, the largest and most important of them. If the courses of the Rhine and Moselle in this region are examined closely in an atlas, it will be noticed that the rivers show in their meanders the characteristics of old age. Yet the cutting of gorges is most typical of a river's youthful energy, for young rivers do not meander, but scurry seaward by the quickest routes. The explanation of these contradictory phenomena—gorges and meanders—is that the rivers had at one time reached the mature stage of swinging in great curves over a flood-plain of their own making, but that afterwards they received

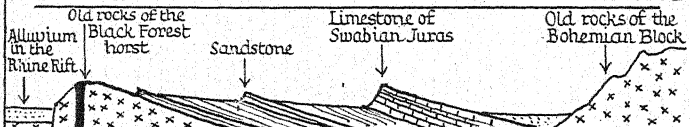
FOUR VALLEY TYPES ON THE RHINE



SECTION FROM WESTERWALD EASTWARD ACROSS WESERBERG-LAND



SECTION FROM THE BLACK FOREST EASTWARD ACROSS THE TERRACE-LAND



SECTION FROM THE VOSGES WESTWARD TO THE PARIS BASIN

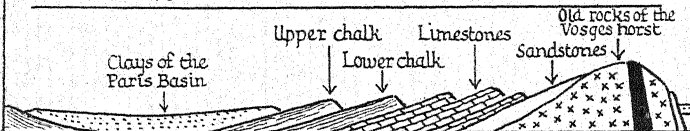


FIG. 16

The black areas in the three sections at the bottom of the diagram indicate volcanic intrusions.

A GEOGRAPHY OF EUROPE

new energy—they were rejuvenated by the raising of the plateau over which they flowed and by additional water-supply, and thus commenced a rapid downward erosion in the loops of their old meanders. (Fig. 16.) Between Bingen and Cologne, the towns at each end of the Rhine gorge, the twists and turns of the river are hemmed in by cliff-walls with few patches of lowland. Coblenz ('confluence'), the only large town in the gorge, commands the meeting of the Moselle and Lahn gorges with that of the Rhine. Bonn, a much smaller town, commands the Sieg gorge junction. The rest of the long defile is dotted with castles, old and new. Throughout history the Rhine-way has been the main north-south 'street' of Europe, and the long procession of traffic has not used this thoroughfare without let or hindrance. The narrow gorge focused movements at its ends, and castles of old grew up to extract toll or to offer safe guidance through the defile in which other strongholds harboured robbers on the look-out for loot as the caravans wound past. To-day two railways, one on each bank of the river, make their way by many tunnels and cuttings from end to end of the gorge.

The steep sides are now terraced to increase the amount of land available for cultivation, and on these steps, more especially on those facing the sunny south, there are many vineyards. As the soil thins and as the uplands become more exposed cultivation ceases and gives place to open moors with sheep pasture.

NOTEBOOK WORK: 34

Draw a map of the Lower Rhine Highlands to show all the highlands and rivers named above: Eifel and Ardennes, Hunsrück, Westerwald, and Taunus; Rhine, Moselle, Lippe, Sieg, Lahn, Saar. Show also the Meuse on the west, the Weser on the east, and the Main on the south. Mark distinctively the industrial regions of the Ruhr, the Silesian coalfield, the Saar, and Cologne. Mark the

THE GERMAN RHINELANDS

ore-deposits of Siegerland and Malmedy. Mark the three big spas with a special sign. Colour the vineyards green. They occur especially where hills have a southern aspect—*e.g.*, behind Wiesbaden, and all along the Moselle gorge, but they do not extend northward beyond the Rhine gorge. Mark Cologne, Coblenz, Bingen, and Bonn.

Cologne

Cologne (Köln) is at the northern entrance to the Rhine gorge and at the western gateway into Germany *via* the Great Plain. It is the third largest city in Germany, the commercial capital of the Rhinelands, a great railway-centre, and a busy air-port. Originally it was a Roman stronghold with the river Rhine as a defensive moat against the barbarians living eastward of the river. In the Middle Ages, when North-western Europe began to grow up, the city became extremely wealthy on account of its focal site, its merchants being the founders of the Hansa League of great commercial centres of those days. Manufactures in the city to-day include textiles, chemicals, machinery, glass, leather, sweets, and perfume;¹ that is to say, it takes advantage of the proximity of the Ruhr towns to get raw materials from them, but makes them up into wares characteristic of the luxury produce of big cities like London, Paris, Berlin, and Vienna. Lignite is mined close at hand.

NOTEBOOK WORK: 35

(i) Draw a diagram (*not* a map) of the spider's web of railways radiating from Cologne to Amsterdam (160 miles), Bremen and Hamburg (200 miles), Hanover and Berlin (350 miles), Leipzig (320 miles), Munich (350 miles), Zürich (360 miles), Paris (300 miles), Brussels (130 miles), London (350 miles).

¹ Eau-de-Cologne is prepared from an essence distilled from the leaves of orange- and lemon-trees and exported from the South of France and the south of Spain.

A GEOGRAPHY OF EUROPE

(ii) Draw a map of Europe's two main land-routes crossing at Cologne—(a) the Great Plain route, and (b) the Rhine route. Show the north edge of the Lower Rhine Highlands and the entrance to the gorge. Put a good title to the map.

THE RHINE RIFT

Between Basel and Mainz the Rhine flows through a long split between the Black Forest and the Odenwald on the right bank and the Vosges and the Hardt Mountains on the left. Actually the rift is wide enough for two rivers, and the Rhine and the Ill flow side by side for a long way before they join. The mountains on each side of the valley are built of the same rocks, the Vosges and Black Forest being formed of old rocks with much granite, and the Hardt and the Odenwald of old sandstones. The real bed of the valley is composed of similar formations, but overlaid now with deep deposits of younger rocks (Fig. 16). The course of the Rhine through the rift is characterized by swinging meanders and ox-bow 'cut-offs,' with much marshy land. Many tributaries, especially from the rainier Black Forest high land, spread alluvial fans on the valley floor, and further complicate the windings of the main stream.

In winter the mountains of the Rift have heavy falls of snow, and winter sports attract many visitors. Spring, however, comes earlier to this region than to any other part of Germany, and is followed rapidly by a hot summer. Rainfall is heaviest on the westward-facing edge of the Black Forest (70 inches), but decreases rapidly in the eastern 'shadow' (30 inches). The warmth, the sunshine, and the ample rains together favour forest growth. The Odenwald is 90 per cent. forest-land of deciduous and coniferous trees, but southward the proportion decreases, although throughout the Vosges and the Black Forest one-third of the area is still forest.

The sheltered site of the Rift, its deep rich soils, and

THE GERMAN RHINELANDS

the pleasant climate make this region 'the Garden of Germany,' with vineyards on the hill-slopes, and crops of wheat, hops, potatoes, tobacco, vegetables, and flowers on the valley floor. There are, however, some areas of poor, unproductive gravels. The region has no coal, but supplies can be brought cheaply by water-transport, and



A TYPICAL BLACK FOREST HOUSE

By courtesy of the German State Railways

the streams of the scarps provide hydro-electric power. In general, the Rift is a rich land, on a great natural highway where factories have almost every facility for importing raw materials and for cheap transport of finished goods. The cottons and woollens of Mülhausen and Colmar are only a part of a wider textile region which will be described later (p. 240). The potash deposits of Mülhausen are also important.

NOTEBOOK WORK: 36

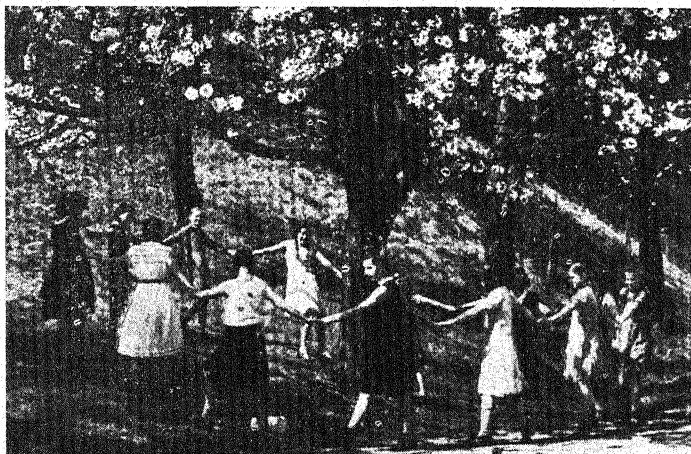
Tabulate in three columns (a) the natural resources of (i) the Rift and (ii) its highland edges; (b) original small-scale industries that can be associated with these resources; and

A GEOGRAPHY OF EUROPE

(c) the new large-scale manufactures. Recollect the farms, the forests, the rocks, the uplands, the streams, and the Rhine highway.

Town-sites

Settlements in the Rift, avoiding the riverine marshes with their liability to floods, occur at the foot of the high-



SPRING IN HESSEN

Hilly South Germany is a much kinder homeland than the harsh Northern Plain. The rye and potatoes of the latter are replaced in the south by wheat, orchards, and vineyards. This picture is reminiscent of orchards in Worcestershire, Herefordshire, Somerset, and Devon.

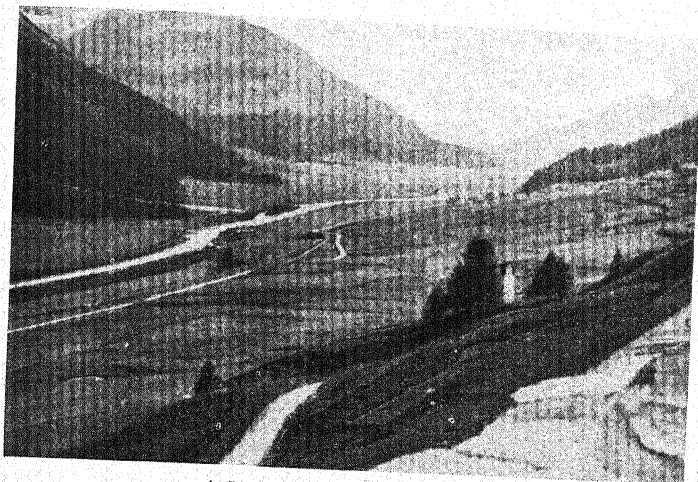
By courtesy of the German State Railways

lands where small tributaries used to supply clean drinking-water and power for old water-mills that either ground the corn or drove the looms. Of many such villages a few possessed more favoured sites than the others in that they commanded side-routes of more or less importance through the enclosing walls of the Rift.

Basel (in Switzerland) is at the southern entrance to the Rift. Mülhausen, not far from Basel, is at the end of

THE GERMAN RHINELANDS

the Rhine-Rhône canal that uses the Belfort gap. Strasbourg (Strassburg), at the north end of the Vosges, commands the Saverne Gate, through which the Rhine-Marne canal passes, and, more important, the main-line railway of the Orient Express route from Paris to Istanbul (Constantinople) *via* Vienna. Strasbourg originated on



A VALLEY IN UPPER BAVARIA

By courtesy of K. Keast

the Ill, and recently has grown to the Rhine. Karlsruhe is on the same line at the opposite side of the Rift. Mannheim and Ludwigshafen are at the Neckar junction, while Mainz (Mayence), at the northern end of the Rift and at the Main junction, corresponds in site to Basel. Many towns between Mannheim and Mainz are engaged in the chemical industry, making acids and fertilizers and finer chemicals used in medicine. For navigation the Rhine in the Rift section has been regulated and its channel strengthened in many parts. Mannheim is the last great river-port, with quays, warehouses, oil-storage, and other

A GEOGRAPHY OF EUROPE

facilities that are more generally associated with ocean-ports. Barges of 1000 tons can reach Mannheim, smaller vessels can reach Strassburg, but beyond this town traffic leaves the river and proceeds by a canal on its left bank to Basel (Fig. 21). Goods going downstream consist of timber, grain, potatoes, tobacco, and some Swiss manufactures to be detailed later; upstream come coal and coke, heavy iron- and steel-ware for buildings, bridges, wharves, railways, etc., heavy machinery, and bulky raw materials like bales of cotton and wool for the factories of Switzerland especially.

NOTEBOOK WORK: 37

Turn this last section on town-sites into a map. Show the hills, scarps, gaps, railways, and canals. Emphasize with arrows the route-centres of Basel, Strasbourg, and Mainz. Distinguish with a thicker line the navigable Rhine as far south as Mannheim.

BETWEEN GERMAN ALPS AND GERMAN PLAIN

The tributaries on the right bank of the Rhine flow through some of the most varied country and most beautiful scenery in Germany. The largest of these rivers is the Main, which rises in the western corner of the Bohemian 'diamond' and flows westward in a zigzag course to join the Rhine at the northern end of the Rift. The Main thus divides the hilly land east of the Rhine into a northern and a southern half. In the former the upper course of the river Lippe links the Rhineland to Weserburg-land—a region of hills and gorges, of farms and forests, through which the upper Weser and its tributaries thread their ways. South of the Main there are three regions in Germany—the Neckar basin, linked to the Rhine; the high Alps of the southern German border;

But the basin of the upper Danube, between the other the Rhine. Although this area, from Hanover in the north to

THE GERMAN RHINELANDS

the Bavarian Alps in the south, and from the Rhine in the west to the Bohemian Forest, the Thuringian Forest, and the Harz Mountains in the east, is not wholly in the Rhine basin, yet it will be described now so as to bring the study of Germany as a country one stage nearer completion. The diversity of Germany has already been pointed out. The northern plain and the industrial areas on its southern edge have been considered. This section has added the German Rhineland to these varied units, and now finally the German lands east and west of the Rhine will complete the jigsaw so slowly pieced together. It is no wonder that a united Germany was late in developing, that a military organization was necessary to secure that unity, that a tendency to disruption is manifest as soon as the central authority weakens, and that the artificial unity has been guilty of excesses, at which separate members are surprised and sometimes ashamed. It is this problem that has called into being an entirely new form of government in an endeavour to consolidate the illusive unity.

A Mosaic of Regions

The hilly land east of the Rhine is a mosaic of little regions of ridge and valley, forest and pasture, vineyards and orchards, wheat-lands and root-lands, of many villages with timbered houses, of old market-towns with Gothic churches, and of ancient castles and monasteries. Between the river Neckar and the upper Danube is a limestone region with a scarp to the north-west and a dip-slope to the south-east, the eastern half of a great limestone dome which must once have crossed the old rocks of the Black Forest and the Vosges, but is represented now by inward-facing scarps on opposite sides of the Rhine, in much the same way as the North and South Downs face inward to the Weald (Fig. 16). The limestone ridge of South Germany is the Swabian Juras, a land of precipitous cliffs, gorges, caves, springs, and scanty upland

A GEOGRAPHY OF EUROPE

pastures. Some parts have intrusive volcanic rocks, with ancient craters now filled by lakes. South of the Danube, in Upper Swabia, is the foreland of the Alps—*i.e.*, the real Alps, and not the mis-named Swabian Alps. When Northern Europe was in the Ice Age the Alpine folds of the south formed an area whence glaciers flowed outward to north and south. Relics of this Alpine ice-cap still remain in the Swiss glaciers of to-day, just as the Norwegian glaciers are remnants of the huge northern ice-cap. The old and large glaciers from the Alps have left in Upper Swabia the usual lines of moraines, the hummocky drumlins, and many shallow lakes. The southern boundary of Upper Swabia and of Germany is the outer line of high Alps—vast layers of younger sedimentary rocks contorted into every possible complication of fold, overfold, and fault, with magnificent peaks where weathering has bared the hard inner cores of the mountains.

Northward of the limestone scarp of the Swabian Alps and their continuation, the Franconian Juras, there is a broken region of sandstones sometimes in terraces and sometimes in faulted blocks with volcanic intrusions (Fig. 16). This area includes the middle Neckar valley, most of the Main basin, and the valleys of the upper Weser and its tributaries. Each basin, each geological area, each small political unit, seems to have its own characteristic surroundings. Winter is severe throughout the whole region, with heavy falls of snow on all the hills and mountains; but the hot summer, with frequent rains and long spells of sunshine, and the varieties of soils make this a land of busy peasant-farmers. The morainic Alpine foreland of the south is a land of pasture or heath, with woodlands in the better-drained parts; farms are large, and villages are far apart. Ridges in the limestone region are bare and often crowned with castles which used to guard the fertile valleys below them. Lower plateau-land is generally under the plough, the valley-bottoms often being forested. Southern slopes are nearly always terraced for

THE GERMAN RHINELANDS

vineyards. The Black Forest alternates forest and cultivation; but the forests themselves are now tended so methodically as almost to be 'cultivated.' The Neckar and Main valleys are famed for their vineyards and orchards of apples, cherries, and plums. Weserberg-land is an area of beech- and fir-forests, with rich farms in the valleys and sheep-pastures on the uplands; large numbers of pigs are reared to become hams and sausages.

Town-sites

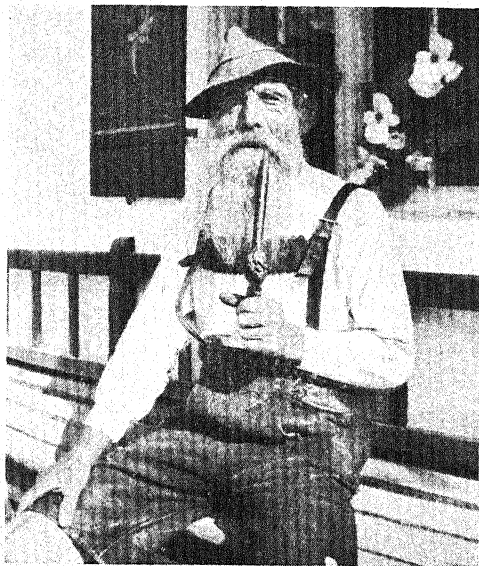
Southward and westward this narrow oblong of hilly land between Alps and plain is marked by a line of towns that were once Roman forts—Vienna, Salzburg (both in Austria), Passau, Augsburg, Ratisbon, Spires (Speyer), Worms, Strasbourg, Mainz, Trèves, Coblenz, Aix, and Cologne—all on the 'Roman' banks of their rivers. It will be noticed that rivers formed the boundary of the Roman Empire in the west. It has been suggested that the weakness of a river frontier as compared with a mountain frontier was one of the causes of the collapse of the Empire; from a military point of view Roman conquests should have been pushed northward and eastward to the line of the Carpathians-Bohemia-Harz Mountains, with the Elbe as the only river frontier, on the northern plain.

The whole of the hilly region we are considering forms a secluded corner of Europe; it escaped the disturbances of raiding Norsemen, migrant Slavs, or destructive Tartars. It is true that the diversity of regions caused the formation of many small, rival states, whose quarrels have been all too frequent, but no sweeping invasions or 'colonizations' have occurred to mar the continuity of the region's history. The result to-day is a marked conservatism of the people and a proud adherence to old customs and dress. Yet the north-south extent of the oblong has favoured connexions with Rome *via* the Alpine

A GEOGRAPHY OF EUROPE

passes. At one time this area, together with the Alps to the south and part of Italy beyond, did actually form one kingdom. The South Germans are still predominantly Roman Catholic.

Within the area many important cities arose—not large



A SOUTH GERMAN PEASANT

This old man is a German, but he is a Bavarian first. He typifies Southern Germany, where people are warm-hearted, jovial, proudly conservative, and very independent.

By courtesy of I. P. Cole

towns, for the smallness of the units does not favour such growth, but prosperous communities, each a centre of both trade and culture. At some time or other almost all the larger towns have been capitals, and the many courts encouraged the development of characteristic cultures. The past wealth of the area is marked to-day by the magnificence of its Gothic churches, its monasteries, and

THE GERMAN RHINELANDS

its castles. Stuttgart is the capital of Württemberg; Heidelberg is a famous university town; Nuremberg (Nürnberg) has a university and a well-known technical school; Munich (München) is, like Dresden and Leipzig, a combined centre of business and culture; Frankfurt-on-Main is similar and, as the home of the Rothschilds, has long been a banking centre; Cassel is the central capital of Weserberg-land; and Hanover, and even Cologne, though not actually within the region under consideration, are typical of the cities of hilly South Germany in long history, early wealth, and their somewhat aloof prosperity to-day.

None of these towns is 'industrial' in the sense that Essen, for instance, is, but some manufactures, only partly explicable from geographical causes, are carried on. Munich makes scientific instruments, electrical goods, and lager beer that has a world-wide reputation; Stuttgart makes pianos and other musical instruments, and motors (Mercédès-Benz); it has printing and publishing establishments and a small textile industry (hosiery); Nürnberg makes toys and pencils, and has new electrical works; Frankfurt has breweries and rubber and chemical factories; many small places in Weserberg-land make linen, woollens, and cottons; Cassel has a textile industry, and manufactures paper and scientific instruments; Friedrichshafen, on Lake Constance, is the headquarters of the Zeppelin Company. The presence of a coalfield at Hanover marks the 'middle' land between the old hills of the south and the young plain of the north, and gives rise to industries in Hanover (machinery, cottons, rubber) on a larger scale than in the towns of the hilly oblong.

In general, however, this land between German Alps and German plain is not industrial, but is an unspoilt country where peasants live on the products of little farms, and where cottage industries (especially in timber) are characteristic. Regions specialize in such products, and families within each village of the regions carry the

M.N. Ash
5.9.62

A GEOGRAPHY OF EUROPE

specializations still farther. Noah's arks, wooden and lead soldiers, wooden trains, simple clockwork toys, musical-boxes, woolly toys like Teddy bears, dolls, Christmas-tree decorations, simple kitchen utensils of wood, cuckoo-clocks, embroidery, gloves, baskets, violins, pencils, parts of elaborate and accurate scientific instruments like thermometers, barometers, and binoculars—these and many other products are the manufactures of the area, except in the few large towns.

NOTEBOOK WORK: 38

(i) Draw a map of the region that has just been described to show the main routes through and around it: (a) the Rhine north-south street; (b) the Great Plain east-west street along the northern edge of the hills; (c) the Orient Express route; (d) the cross route from Frankfurt to Vienna *via* the Main and Danube valleys; (e) the link route from Hanover to the Main valley. Add the boundaries of Germany, and name the adjoining countries.

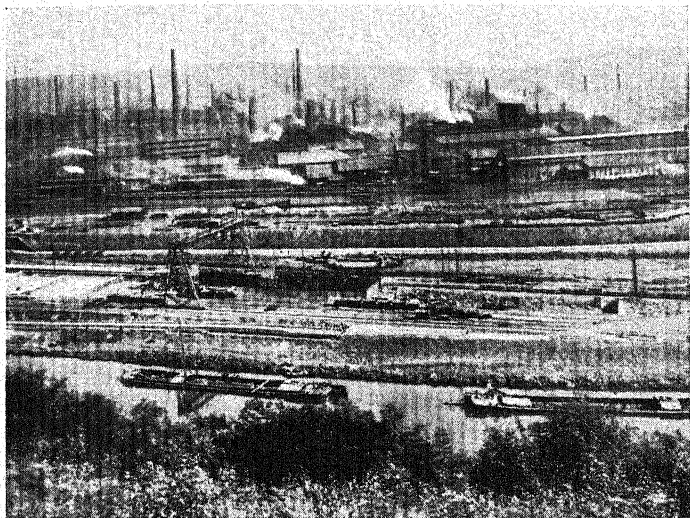
(ii) Draw a map of German territory west of the Rhine. Mark distinctively the present boundary and the pre-War boundary. Name Alsace, Lorraine, and the Malmedy district. Show the different importance of these three areas ceded by Germany—the iron ores of Lorraine, the lead and zinc of Malmedy, and the strategic site of Alsace with regard to the control of (a) the whole Rhine Rift and (b) the Saverne Gate at Strasbourg. Mark the Saar Territory, and after reading the account which follows write a note on its importance.

THE SAAR

The disputed Saar Territory between the German and French borders is only a small industrial area of 738 square miles with a population of just over 800,000, Saarbrücken, the largest town, having 132,000 people. The coalfield is on the south edge of the Hunsrück block. Some iron ore Theurs with the coal, and the richer Lorraine ores are magn in easy distance. In some respects the area resembles

THE GERMAN RHINELANDS

Upper Silesia; the countryside is rich farm-land and the miners are the farmers, each house of the mining villages having a cow-byre and hayloft, with enough adjoining land to make an economic smallholding. The pit villages are thus very different from those on British coalfields. The iron-works produce pig-iron and finished or semi-



STEEL-WORKS NEAR SAARBRÜCKEN

By courtesy of the German State Railways

finished iron and steel goods, while porcelain and glass manufactures are also important. By the Treaty of Versailles the mines were ceded to France for a period of fifteen years as compensation for damage done to French pits in the war zone, but the rapid reconstruction of the mines of the north-east, the increased production of coal there, and the extra supplies from the Saar have resulted in more than abundance of this quality of coal for French needs. A plebiscite, taken in January 1935, resulted in

A GEOGRAPHY OF EUROPE

an almost unanimous vote in favour of reunion with Germany, and the League of Nations promptly complied with the wishes of the people.

SOME STATISTICS ABOUT GERMANY

For comparative area, uses of land, comparative population, and occupations, see Figs. 26, 27. Figures about coal and iron have already been given at pp. 135, 138, 139, 140.

CROPS IN 1933, IN MILLIONS OF TONS

Potatoes	44·1 ¹
Hay	32·8
Rye	8·7
Sugar-beet	8·6 ²
Oats	6·9
Wheat	5·6
Barley	3·5

NUMBER OF ANIMALS IN 1933, IN MILLIONS

ANIMALS	GERMANY	GREAT BRITAIN
Pigs	23·9	3·3
Cattle	19·7	7·9
Sheep	3·4	25·9

IMPORTS IN 1934, IN PERCENTAGES OF TOTAL VALUE

Raw cotton and wool	13
Raw materials of all kinds	55
Food and drink	23

EXPORTS IN 1934, IN PERCENTAGES OF TOTAL VALUE

Metal goods	18
Chemicals and dyes	13
Coal	5
Cottons, woollens, silks, and artificial silks	5
Paper	3
Manufactures of all kinds	70

¹ The largest producer in the world.

² The second producer in the world, but almost equal to U.S.A., the leading producer.

SWITZERLAND

SWITZERLAND

[The last of the natural regions of the Rhine basin is the upper Rhine, but, because this upper basin forms most of Switzerland and because the rest of the country is intimately connected with the Rhine route, this section will consider the whole of Switzerland as one unit.]

The physical map of Switzerland in most atlases is a rather dull page of browns that, unfortunately, do not suggest the grandeur of Swiss scenery. A closer study of the map suggests some definite regional boundaries which will reduce the intricacies of the mountain-structure to simpler terms (Figs. 15 and 17). First, in the north-west are the Juras, the heights of which form the political boundary of Switzerland from near Geneva almost to Basel. Next the many lakes group themselves into two lines, one of which, with Lakes Neuchâtel and Bienne, lies at the southern foot of the Juras, while the other, including Lakes Geneva, Thun and Brienz, Lucerne, Zug, Zürich, and Constance, lies at the northern edge of the Alps. Between the two approximately parallel lines is a plain or low plateau with Berne in its centre. The northern boundary of Switzerland is generally the river Rhine where it crosses this plain. Yet another distinct line is formed by the courses of the rivers Rhône and Rhine in the middle of the Alpine region, the line being broken in its centre by the St Gotthard 'knot' of mountains. This line also has a parallel farther south, mostly just across the Swiss border in Italy—a more broken line than that of the Rhône-Rhine, but shown distinctly by the Val Tellina just east of Lake Como, by the lie of Lake Lugano between Lakes Maggiore and Como, and by the Val d'Aosta in the west. Between these two lines is the core of the Alps.

The natural regions suggested by the foregoing account are in parallel belts with a general south-west-north-east trend. They do not imply the unity of a state, for such

A GEOGRAPHY OF EUROPE

strips are like warp-threads, which need a weft to bind them into cloth. Further study of the atlas map reveals this necessary weft, for from the St Gotthard peaks not only do the rivers Rhône and Rhine flow outward along the direction of the strips, but two other streams, the Reuss and the Ticino, flow northward and southward respectively. The former serves as a front path leading out from an Alpine home down a widening terrace-way on to a level lawn bounded on its far side by the wall of the Juras: the Ticino valley becomes a back entrance to the same home, and it is only along the course of this river that the southern boundary of Switzerland leaves the high Alps to include both sides of this important back-passage (Fig. 17). The Swiss Alps are thus a main water-parting of Western Europe, for from the St Gotthard knot radiate the following rivers: (*a*) westward, the upper Rhône; (*b*) northward, the Reuss, which flows into the Rhine; (*c*) eastward, the upper Rhine, whose direction is continued eastward as the upper Inn, flowing into the Danube; and (*d*) southward, the Ticino, leading down to the Plain of Lombardy and to the Mediterranean Sea.

Centrally situated between the three great continental Powers of Western Europe—Germany, France, and Italy—perched on an uncoveted knot of high mountains, placed at the only point of this Alpine barrier where four important valleys radiate and, conversely, where four important valleys invite approach and compel meetings, this advantageous site has become the state of Switzerland, the home of the League of Nations and the headquarters of the Red Cross Society, whose flag is the Swiss flag with the colours reversed. It was not without some misgivings that the Swiss allowed their country to become a European and even a world committee-room; it was true that such meetings would become important sources of income in a comparatively poor country, but the Swiss were determined first of all to preserve their independence and neutrality, taking rashly no step that might ultimately

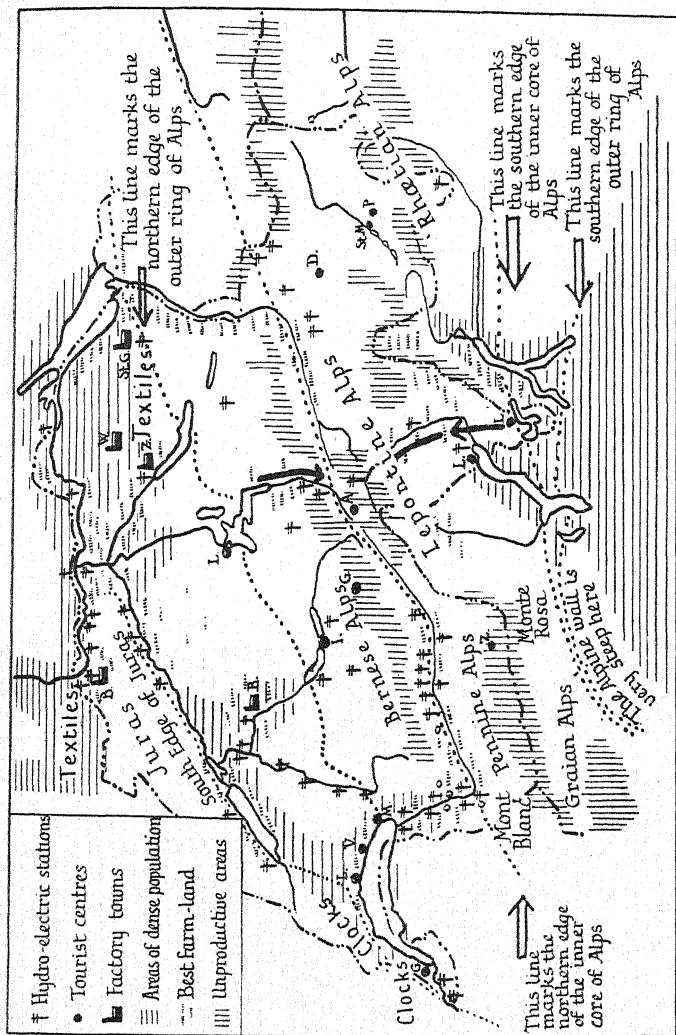


FIG. 17. SWITZERLAND: STRUCTURAL AND OCCUPATIONAL DIVISIONS

A GEOGRAPHY OF EUROPE

entangle them in the disagreements of other Europeans. However, it is in Switzerland now that most international conferences are held, because no other place in Europe offers the same centrality and the same aloofness from other European states.

In connexion with this centrality of site it will be as well now to consider the main routes in and through Switzerland, rather than leave them to a later stage when other aspects that ought to take geographical precedence have been discussed.

NOTEBOOK WORK: 39

Draw a map of Switzerland to show the Rhône, Rhine, Aar, Reuss, and Ticino; the two lines of lakes, and also the Italian lakes; the Juras, the plain, and the outer and inner Alps. Mark the following routes: (a) Rhine Rift-Basel-Lucerne-St Gotthard Tunnel-Ticino valley-Milan; (b) over the western Juras-Lausanne-Rhône valley-Simplon Tunnel-Milan; (c) Lyons-Geneva-Rhône valley—and then as in (b); (d) Geneva-Berne-Basel or Zürich; (e) Basel-Rhine valley-St Gall-Arlberg Tunnel-Inn valley. Perhaps your map can show also these routes (outside Switzerland): (f) Lyons-Rhône valley-Mont Cenis Tunnel-Turin-Milan-Verona; (g) Innsbruck (on the Inn)-Brenner Pass-Verona. Study all these routes carefully in the atlas to note just how the railways cross the great barrier of the Alps.

THE ALPS

It was once thought a sufficient explanation of mountain-ranges to liken the earth to a wizened apple and say that the mountains of the former corresponded to the wrinkles of the latter: the solid crust round the shrinking interior of the earth is bound to crumple or collapse because its foundations are continually receding. This illustration may be mainly true, but it does not account for all the observed facts. If these be set out one by one the nature of the problem of folded mountains will be clearer. The

SWITZERLAND

following facts, with particular reference to the Alps, are the results of scientific observation:

(1) It can be seen that the Alps are composed of violently twisted strata—hence the expression ‘folded mountains.’

(2) The strata themselves are vast thicknesses of sedimentary rocks like limestone, implying (a) that the mountains have risen from the sea, and (b) that the strata were therefore once horizontal.

(3) Where weathering has been drastic masses of igneous and other crystalline rock are revealed within the mountains.

(4) Folded mountains are in definite lines or chains.

(5) On one flank or both flanks of the folds there are always blocks of old, hard rocks.

The questions arising from these proved facts are:

(1) Why are the Alps folded? What caused the folding? It can be produced only by lateral pressure. What was this pressure? Folding implies a big reduction in the area of the strata. What is it that is shrinking?

(2) If the strata are so thick, then either they have formed in very deep sea or in a sea whose depth remained constant as fast as it was filled—i.e., a sea the floor of which sank gradually under the weight of depositions upon it. Further, the material of the strata must have originated from some land. Why did such seas form, and why in lines? How is it possible to account for (a) the rise of the strata from the deep sea or (b) a sea with a sinking floor?

(3) What is the connexion between the deep-sea deposits of the outer coat of the mountains and the crystalline core?

(4) Is there any connexion between ‘blocks’ and ‘folds’? What are these ‘old blocks’?

Other problems also arise, but the above essentials are sufficiently complicated. Now the answers to these questions are *theories* only; they are the result of intelligent

A GEOGRAPHY OF EUROPE

reasoning, but there is no proof that any one of them is correct or that other new theories may not be equally acceptable. Briefly they are as follows:

As regards the cause of folding there are two main ideas, both of which depend on the notion that continents are huge lumps of a sort of slag floating (but more or less immersed like an iceberg in the sea) on some viscous or semi-molten material not far within the earth's crust. Without going into details of the chemistry of this formation, we may accept the general idea that the materials of a rotating molten sphere would automatically tend to sort themselves out according to their various weights, the lighter floating on the heavier.

If, then, land-masses are floating, it follows that they might move about. Exactly what the motive force is or has been scientists are not agreed; whether there is a general westward drift of land with some great tidal force in the molten interior, or whether the movement is the result of the mechanics of a rotating sphere, or whether there is a general drift downward into the great hole marked by the Pacific Ocean, nobody knows. But the *lines* of folded mountains do certainly suggest some sort of continental drift. Further, it is not generally agreed whether these mountains represent the crumpled edge of the advancing land-mass or the upheaval of the deep strata in front of this edge or between two edges advancing from different directions. For instance, a study of the Alps suggests a mighty thrust from the south, while the formation of the Balkan Mountains not far to the east suggests a similar thrust from the north; that is to say, physicists are not agreed whether the Alpine folds in general are due to a northward move of the African block, a southward move of the European block, or movements by both heaving strata from a deep sea where the Mediterranean now lies. It should be noted now, with reference to the first of the questions about folded mountains, that once the idea of moving continents is established there is no need to think

SWITZERLAND

of the earth as continuing to contract like the shrivelled apple.

The idea of a floating continent also provides a plausible answer to the second question with regard to the origin of the vast thicknesses of sedimentary rock, for, if a floating continent be loaded with accumulations, it will sink slowly like a ship receiving its cargo, and the sinking will make room for further thicknesses of deposits. In this way a shallow hollow may become more and more concave to hold thicker and thicker accumulations. Such troughs are called geosynclines; how and why they should have formed we do not know, but it seems as if they represent definite lines of crustal weakness.

This leads to the answer to the third question. If the thick strata of a geosyncline are squeezed somehow into great folds, it is reasonable to suppose that molten material will ooze upward into the inner hollows of the upfolds. Weathering of the sedimentary rocks of folded mountains may thus reveal in their centre a core of igneous material. A more recent theory, however, regards the hard inner core of the Alps not as an igneous intrusion, but actually as part of the northern (European) block. According to this idea, the Alps are regarded as a great earth wave, which broke against the central block, forcing layers as nappes piled on one another towards the north (Fig. 18). The wave metaphor is further illustrated in the Juras, which seem to be ripples beyond the breakwater, while the very gentle curves of the Paris basin and the Kentish Weald represent the farthest fringes of the Alpine storm.

In a very diagrammatic way the idea of the origin of folded mountains may be shown by drawing a series of pictures of what would happen on a shelf containing, say, six books lying flat to which a supply of loose papers was continually being added—the shelf, however, becoming smaller by the inward movement of either or both of its ends. The six flat books would eventually be jammed tight and covered with loose papers. If the sideways

A GEOGRAPHY OF EUROPE

pressure were continued the books would have to bend, thus forming a shallow hollow in the centre (representing the beginning of a geosyncline) into which the loose papers lying on the books and any others consequently added would naturally drift. Continue the lateral pressure; the hollow becomes deeper, the books at the sides become

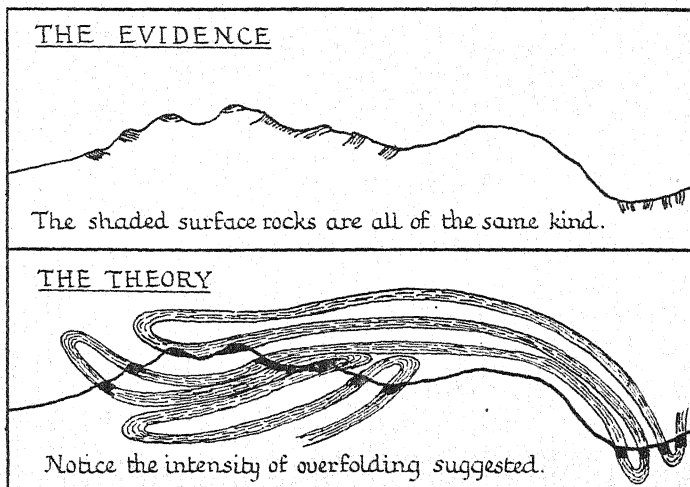


FIG. 18. THE NAPPE THEORY

Adapted from "A Text-book of Geology," by P. Lake and R. H. Rastall (Arnold)

more tilted. Further pressure—and the papers will start to fold into an arch, which will almost certainly bend away from the side whence most pressure is coming. At some stage it is likely that a few of the folded papers may flick right over in the direction of the overfold, and, if this happens to a fair number of the sheets, a tilted book, relieved of the support of the wedge of paper, might actually slip back on the opposite side towards the shelf. In this illustration we have moving blocks, complicated folds, a breaking wave of papers forming nappes, and a sinking block in the lee of the folding.

SWITZERLAND

Fig. 18 shows a section across the Alps, and is the result of deductions from evidence revealed in the surface rocks of the mountains. Notice the intensity of the overfolding, and how the explanation implies that vast thicknesses of rock have been pushed right over the core, so that in some places the arrangement of the strata is upside down.



AT THE TOP OF THE ST GOTTHARD PASS IN SUMMER

By courtesy of K. Keast

To the north of the Alps the block is represented by the Vosges and Black Forest horsts, between which the rift is a collapse under the strain of the Alpine push. Throughout these blocks volcanic intrusions are general. South of the Alps is a sunken block, now the mud-filled hollow of the Plain of Lombardy, while farther south the Tyrrhenian Sea represents another collapsed block with still active volcanoes on its flank.

NOTEBOOK WORK: 40

Draw from an atlas a map to show the different ranges of the Swiss Alps. Mark the following: (a) the rivers, lakes, and

A GEOGRAPHY OF EUROPE

physical regions as in Exercise 39; (b) the Pennine Alps, with Mont Blanc, the Matterhorn, Monte Rosa, and the Great St Bernard Pass; (c) the Lepontine Alps, and the Simplon and St Gotthard Tunnels; (d) the Bernese Alps; (e) the Rhætian Alps. Notice how little of the outer ring of Alps is on the Italian side, but how on the northern side of the core the outer ring is piled into peaks as high as many in the central core. Mark the following holiday resorts with initial letters only: Davos, St Moritz, and Pontresina in the east; Andermatt at the St Gotthard cross-roads; Zermatt in the south; Locarno and Lugano on the southern lakes; Geneva, Lausanne, Montreux, Interlaken, and Lucerne on lakes at the edge of the Alps.

MOUNTAIN CLIMATES IN SWITZERLAND

The Swiss plain round Berne has a climate not unlike that of the Rhine Rift Valley. Winters are not severe; snow sometimes falls, but does not lie long; outdoor farm-work can continue without a break; rain is frequent; and, near the lakes especially, unpleasant fogs occur. Spring is short and summer comes rapidly, when it is hot except near the lakes; heavy showers and long periods of sunshine alternate. The flat, arable land and the mild climate have attracted most of the Swiss people to this region.

But mountains are more characteristic of Switzerland, and their climate has certain peculiarities that deserve special attention.

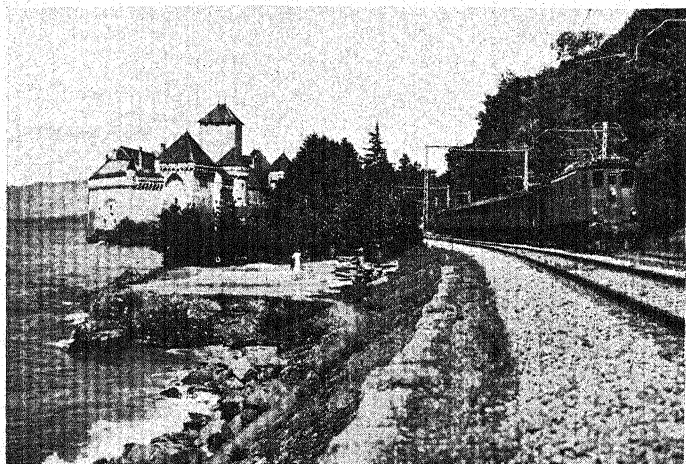
DAVOS: TEMPERATURE AND RAINFALL

—	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
Temperature . .	19	23	27	36	41	50	54	52	47	38	30	21
Rainfall . . .	1.8	2.2	2.2	2.2	2.3	4.0	4.9	5.0	3.7	2.7	2.2	2.5

c Davos is in a small valley, over 5000 feet high, between the upper Rhine and the upper Inn. The height accounts for the low temperatures, the mountain site for the heavy snowfall, and the inland site for the summer maximum.

SWITZERLAND

But the figures themselves do not tell the whole story of this climate, nor do they give a correct impression. An average January temperature of 19° F. suggests intense cold, but the figures recorded by the thermometer in the shade do not register what warmth people feel in the sunshine. Again, all the rainfall figures shown above for



BY THE LAKE OF GENEVA

On the main railway to the Simplon Tunnel.

By courtesy of the Swiss Federal Railways

months when the temperature is well below freezing-point should be multiplied by ten to give approximate snow-fall measurements. The 5 inches of rain in August (twice the rainfall in London for the same month) suggests unpleasant dampness, but actually the climate on the whole is dry and sunny with occasional very heavy down-pours. Thus with all temperature figures given in this book it is necessary to read between the lines to arrive at a correct estimate of weather conditions.

At the summit of a high mountain the air is rare; there

A GEOGRAPHY OF EUROPE

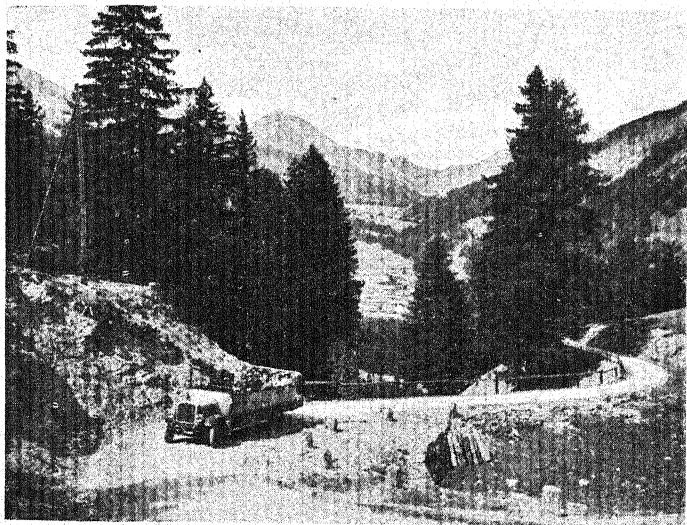
is very little atmosphere to absorb warmth from the sun's rays. In consequence the air is cool or cold. But rock surfaces (or human beings) exposed to the sun become very hot. Solids, however, do not retain their heat as air and water do, but radiate it as rapidly as they absorb it; when the sunshine leaves mountain rock surfaces they cool very quickly, and it is this alternate heating and cooling which causes the rocks to split and to weather into jagged peaks. People in the sunshine on high mountains feel hot, and very light clothing can be worn; perhaps the reader has seen pictures of children in Alpine sanatoria playing in the snow and wearing only canvas shoes and bathing-slips. The dangers that have to be guarded against are excessive sunburn and blindness from the sun's glare off the snow. Skiers always smear their faces with greasy ointment and, except in racing events, wear dark glasses. After sunset, or on the shadowy sides of valleys, the cold is intense, and very thick woollens are essential. The rarity of the air causes mountain-sickness, a complaint that generally soon subsides, but the sunshine and the freshness and cleanliness of the atmosphere are most beneficial to health. It should be noted that high mountain resorts are equally enjoyable in both summer and winter.

The Foehn

If cool and moist air is drawn over the Alps from south to north to fill up a depression on the north sides of the mountains, a peculiar set of circumstances arise. The air first has to ascend the steep southern face of the Alps, and in doing so it is cooled and moisture is condensed. But this condensation liberates heat—the heat that originally kept the moisture in vapour form—and consequently the air reaches the mountain summits comparatively warm. Then as it descends the northern slopes its temperature rises rapidly by compression, so that the wind goes down the northern valleys hot and parching, not only melting

SWITZERLAND

snow but evaporating it in its track, thus changing a winter scene to a summer scene in a few hours. This wind is the foehn, especially frequent in spring (it was said originally that the wind at its start must be cool), but occurring also in late autumn and winter, a phenomenon characteristic only of valleys with a south-north



THE UMBRAIL PASS AND THE MÜNSTER VALLEY BEYOND

Atlas maps of Switzerland rarely show the many excellent motor-roads which now cross the Alps.

Photo Feuerstein, Schuls

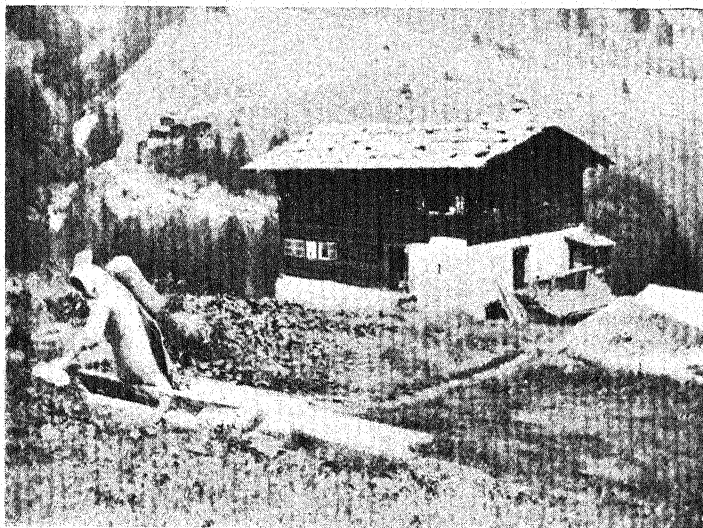
By courtesy of the Swiss Federal Railways

direction on the northern side of the Alps. It is welcomed in spring-time because it marks the end of the long, snow-bound winter, and in autumn it helps to ripen the vines; in winter it may cause disastrous avalanches, while at all seasons it makes everything so tinder-dry that, in a land of wooden houses and forests, destructive fires are dreaded.

A GEOGRAPHY OF EUROPE

NOTEBOOK WORK: 41

Draw a section from north to south across an Alpine range, marking with arrows the course of a wind over the mountain. Add notes above the section to explain the conditions necessary for this wind to have a foehn effect.



A FARMHOUSE HIGH IN THE ALPS

By courtesy of S. C. Rowland

Compare this wind with the Chinook of the Rocky Mountains.

VEGETATION AND ALTITUDE

NOTEBOOK WORK: 42

From the following paragraph construct a diagram and add notes.

The different vegetation belts on a high mountain in Switzerland are the direct results of climatic variations dependent on altitude—the gradual decrease of temperature, the gradual increase in the length of winter, and the rapid increase in rainfall up to that

SWITZERLAND

altitude where the supply of vapour becomes more or less exhausted. Up to 5000 feet deciduous trees grow; between 5000 and 6000 feet is the limit of larch and spruce, but pine-trees thrive to nearly 7000 feet, where they begin to deteriorate rapidly; at 7000 feet tree-forms are reduced to shrubs, and heather is general; at 9000 feet only lichens survive and the vegetation type soon becomes cold desert. Glaciers descend to between 8000 and 4000 feet according to the exposure of their sites to warming influences.

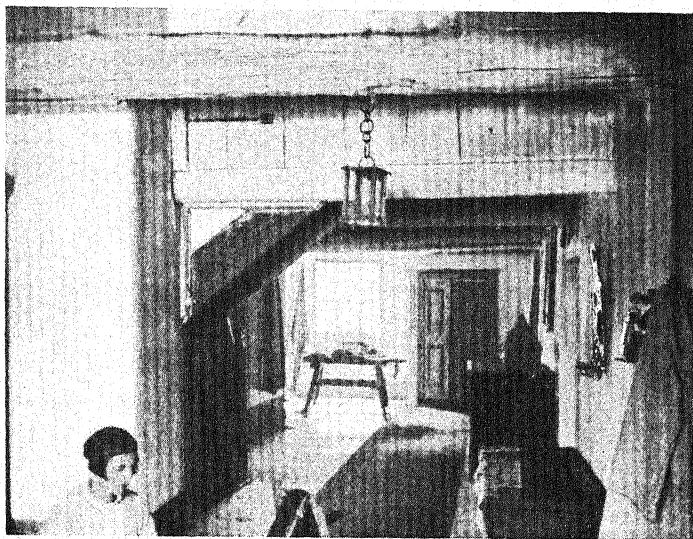
PRODUCTS OF A MOUNTAIN LAND

A consideration first of the native produce of Switzerland becomes in part a repetition of what has previously been said about the fjords of Norway, except that Switzerland is farther south and has no sea from which fish-food can be drawn. High mountains and snow-fields are repeated; so are the glacier valleys, the sea-filled fjords being replaced by narrow U-shaped gullies with turbulent, muddy streams; coniferous forests cling to the valley sides, while between the upper tree-line and the glaciers the summer saeters reappear as the pastures called 'alps.' Relief, rock-slopes, and lack of soil combine to make mountainous Switzerland almost as unkind a land as Norway to those who have to wrest a living from the Alps. The result has been emigration or attempts at emigration to more desirable homelands. Romans, Germans, Burgundians, and Saracens in their turn conquered Switzerland or part of it, but their objective was always the control of mountain-passes to other lands; Switzerland itself was regarded merely as an inconvenient barrier to richer conquests and never as a land worthy of settlement. Yet the Alps bred in their few inhabitants a sturdy independence which was quick to seize opportunities afforded by site and quarrelsome neighbours to establish a neutral republic around the disputed knot of highland.

Life in the Alpine valleys is to-day still very hard. In the first place it is not easy to decide where to live: the north side of a valley is sunnier than the south, but this

A GEOGRAPHY OF EUROPE

warmth causes avalanches in the spring thaws. Winter avalanches are caused by the wind sweeping onward the top layers of powdery snow. All avalanches follow definite tracks, marked by scars of earth and boulders through the forests of the mountain slopes. The seeker for a house-site has other things than avalanches to consider. Steep



THE INTERIOR OF A CHALET IN AN ALPINE VILLAGE

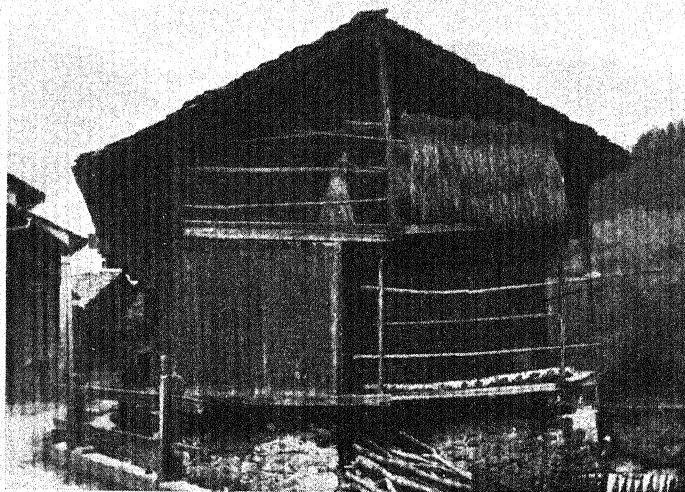
Compare this with the Norwegian house shown at p. 27.

By courtesy of S. C. Rowland

rock-walls are apt to split into slabs which hurtle on to the valley floor. The valley floor itself is, of course, more attractive than the surrounding slopes, but it has its dangers, too, from sudden floods during spring thaws or summer thunderstorms. When eventually a satisfactory site has been chosen the home is usually made of spruce or larch, and designed with a steep roof and wide eaves against winter snowfalls, with double windows against

SWITZERLAND

'dust' avalanches, and with a veranda as an extra room to receive the full benefit of sunshine at any season. The forests supply fuel for the special stove which is arranged so that, once lit, the draught can be reduced to a minimum to prevent the rapid consumption of the wood and charcoal within. The reason for this economy is not to



DRYING HAY UNDER THE EAVES OF A SWISS CHALET

Somewhat similar arrangements are common at the farms in rainy Western Norway.

By courtesy of S. C. Rowland

save the peasant the labour of wood-cutting, but to preserve the forests which bind the soil on to the slopes, prevent a too rapid run-off of rain into the valley, and barricade the avalanches. All felling is carefully regulated, and only trees marked by the Government foresters may be removed. In many cantons it is the rule to plant two saplings for every old tree cut down.

A GEOGRAPHY OF EUROPE

The rich grass of the meadows beside the stream in the valley and the fresh summer pastures of the alps suggest dairying. Often the peasant builds for himself a second and even a third home of wood or wood and stone on the alps. In winter, however, all cattle have to be kept indoors, and so hay for winter forage is the most important



HIGH SUMMER PASTURES IN SWITZERLAND

This photograph was taken on a limestone upland of the Swiss Juras. The summer meadows of the high Alps are characterized by richer pastures than in this picture and by many glacial streams.

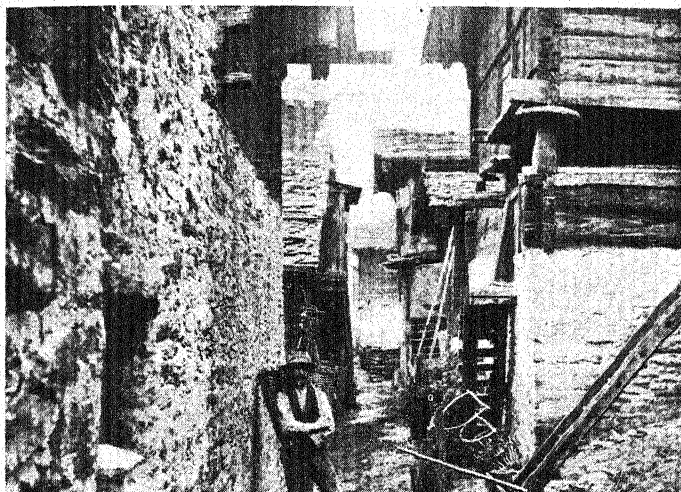
Photo F. Ormiston-Smith

By courtesy of the Swiss Federal Railways

crop. Summer is a very busy time: herding, mowing, stacking, and cultivating small patches of low land for potatoes, greens, and perhaps vines on a sunny slope, all take place. There is no school in summer; every one must help with the farm-work on high alp or in low valley. Three crops of hay can be gathered (all with the sickle) before October, and this hay is not taken to the farm until the first winter snow makes the use of sledges possible.

SWITZERLAND

Winter is a dull time when the peasant is confined to his *chalet* with the beasts. Hay is hauled, and timber is felled, sawn, and stacked; but farm-work cannot possibly occupy all the long days. Hence there has been a development of cottage industries like wood-carving, lace-making, and the assembling of watches and clocks from parts



A STREET IN A SWISS MOUNTAIN VILLAGE

By courtesy of S. C. Rowland

supplied by itinerant merchants. Neglect of these occupations results in a drift of population away from the dullness of the mountain winter to the factories in the towns; consequently the Government to-day tries to give the cottage craftsmen every encouragement.

It is obvious from this account that the necessity which the peasant cannot provide in plenty is bread; of milk, butter, cheese, meat, and drink he has enough and to spare, while hides, wool, and goat-hair could provide materials for clothing if he were forced to make his own.

A GEOGRAPHY OF EUROPE

The surplus of dairy-stuff enables him to buy corn, potatoes, or chestnuts.

Conditions on the Swiss plain are quite different, though here also rain and sun encourage dairying in the green meadows rather than the cultivation of cereals. Wheat and rye are both grown, but insufficiently for the needs of the people. The vine becomes specially important on south-facing slopes overlooking lakes, but there is no surplus of wine for export.

NOTEBOOK WORK: 43

Draw a section across a Swiss mountain valley; mark the northern and southern sides, and note the occupations in different regions of the section.

SWISS TRADE

After reading the foregoing account of Swiss products the following facts about Swiss trade are rather surprising and obviously need explanation:

TRADE IN 1934

EXPORTS		IMPORTS	
COMMODITY	PERCENTAGES OF TOTAL VALUE	COMMODITY	PERCENTAGES OF TOTAL VALUE
Textiles (cottons and silks mainly)	28	Food and drink	23
Clocks and watches	13	Metal goods (including machinery)	21
Machinery (mainly electrical)	11	Chemicals and dyes	6
Dairy produce	5	Timber	3
		Clothing	2.6

All others (timber, chemicals, hides, etc., in the case of exports) are much smaller percentages.

See also Figs. 26 and 27 for uses of the land and occupations of the people.

SWITZERLAND

The following further emphasize the nature of Swiss trade:

EXPORTS FROM SWITZERLAND TO THE UNITED KINGDOM IN 1933, IN THOUSANDS OF POUNDS STERLING

Artificial silk goods	742
Watches	718
Silk goods	436
Dyes	340
Embroidery	195
Electrical goods	163

EXPORTS FROM THE UNITED KINGDOM TO SWITZERLAND IN 1933, IN THOUSANDS OF POUNDS STERLING

Cotton goods	945
Cotton yarns	322
Woollen yarns	484

Most of Switzerland's imports came from Germany, France, and Italy; most of her exports went to Germany, France, the United Kingdom, and Italy.

These tables show (*a*) that most people in Switzerland are engaged in farm-work, (*b*) that their speciality is dairy produce, (*c*) that Switzerland is nevertheless an industrial country, and (*d*) that her special factory products are textiles and metal goods.

Switzerland has no coal, but has ample water-power; the country has hardly any mineral wealth because the Alps are young, and the central core, which may contain mineral veins, is not yet sufficiently weathered to make mining economical. All the raw materials for manufactures have to be imported, and Switzerland has no coast. The central site implies imports from almost any convenient direction, but the transport of such goods will be largely by rail, and, further, over lines with long tunnels that have been very expensive to build. Switzerland is surrounded by nations with big industrial development—that is to say, the nearest markets seem to make the same kinds of goods that Switzerland produces. Switzerland has no empire markets. How, then, does it come about that the land is industrialized at all and

A. GEOGRAPHY OF EUROPE

apparently successful in competition with other industrial nations much more favourably placed?

Physically Switzerland is a poor country, and as such had the option of remaining a land of peasants living a very humble life or of bestirring herself to improve her plight and become wealthy by other means. Centrally situated in Western Europe, Switzerland watched first Britain, then Germany, Belgium, and France, amass wealth rapidly during the last century from machine produce, and so was tempted to try the same means. Japan, also a poor, mountainous land, has entered into competition too. Switzerland and Japan and other countries, like Russia, Italy, Poland, and Czechoslovakia, that are being rapidly industrialized now, all started very late in the race, when already the originators had captured most of the world's markets. Latecomers have thus been faced with two alternatives: either (*a*) to make their products quite different from those of the old industrial countries and to start a demand for a new class of goods, or (*b*) to make the same type of product as the older factories were successfully turning out and then create an artificial market by excluding from land under their control all factory goods except those from their own concerns. The latter idea is to a large extent the cause of the high tariff walls round countries like Poland; the former idea has led Japan to specialize in goods of a remarkable cheapness and Switzerland to specialize in beauty, fineness, and delicacy of finish. This does not mean, for instance, that Lancashire has made neither cheap cottons nor cottons of distinctive quality: Lancashire has made and still makes both, but specializes in neither, preferring to turn out cottons that cannot be matched for both cheapness and quality. Switzerland has specialized quite definitely in a certain daintiness of textiles that is obtained only with much labour, skill, and patience devoted to a comparatively small quantity of material. Silk, fine cotton, fine wool, and, more recently,

SWITZERLAND

artificial silk lend themselves to this particular work. The amount of raw material imported is thus relatively small, and may be received as half-finished material on to which the Swiss factories will put their distinctive finishing touches. Thus Switzerland imports silk thread from Italy but not much silk, cotton yarn from Germany but not



ENGELBERG

This is a popular Swiss resort, 3500 feet high in the mountains immediately south of the Lake of Lucerne. Note the distant peaks, the snow, the shape of the valley, the forests, the meadows, the hotels, and the sunshine.

Photo Franz Schneider

By courtesy of the Swiss Federal Railways

much cotton, woollen yarn from Yorkshire but not much wool, etc. Exactly the same argument applies to Swiss metal goods; materials come in a semi-finished form particularly from the Ruhr, and in Switzerland are made into clocks, watches, and the more delicate parts of electrical machinery.

The tourist industry is, of course, a source of considerable income to Switzerland, but it employs far fewer people than is generally realized.

A GEOGRAPHY OF EUROPE

Textile factories are situated at Zürich, St Gall, and Basel; the clock and watch industry is centred at Geneva and, more particularly as a cottage industry, among the villages of the Juras; St Gall, Winterthur, and Basel make electrical machinery.

TOWN-SITES

NOTEBOOK WORK: 44

Make up your own maps to show the sites and importance of the following towns and write any necessary notes:

- (a) *Basel*, commanding the northern 'door' of Switzerland and branch routes to east and west using natural 'streets': mention the manufactures and the importance of this city as a banking centre.
- (b) *Geneva*, commanding the French 'door' of Switzerland: mention the League of Nations.
- (c) *Lucerne*, commanding the Alpine 'door' of Switzerland: mention the tourist trade.
- (d) *Berne*, a central capital for the people of the Plain and the people of the mountains (*cf.* Shrewsbury as a Welsh capital, York as a 'dales' capital, Carlisle as a valley focus, etc.).

SECTION V

FRANCE

UNITY AND DIVERSITY

ALTHOUGH the subjects of the sections of this book are conceived primarily as large natural regions, with the political boundaries as secondary considerations, it will have been noticed that states as units have, with one exception, fitted satisfactorily into the main scheme. The awkward country has been Germany. Diversity of surroundings has not been lacking in other countries, but the sub-regions of any one country have always been subservient to a greater, unifying influence. Such unity in Germany is achieved partly by racial and linguistic homogeneity, but also by the more artificial means of strict discipline from a Governmental centre. In the present section a state, France, is the unit, and it is necessary to realize first how and why it becomes unified. There is certainly no monotony of relief, as in Russia, to account for the unity of France; the left-hand map in Fig. 19 shows that high land and low land, block and fold, ridge and plain, all produce a diversity comparable with the varied structure of Germany. French peoples, too, are of many distinct types; Celts in Brittany, Walloons in the north, Basques around the Pyrenees, the gay folk of Provence, the stolid fishermen of the Channel, the Savoyards of the Alps, the Parisians—these are only a few of the types, each with its own dialect, customs, and intense local patriotism. Occupations are just as diverse, ranging from the factory work of highly industrialized areas to the struggling existence of Alpine peasants on ungenerous mountain-sides. Climates vary from the sunshine of the

A GEOGRAPHY OF EUROPE

Mediterranean coast to the raw drizzles of the north-east, from the invigorating air of the Alps to the sultriness of a southern delta, and from the mild west to the severity of inland mountains. In consequence there is as much variety in vegetation—deciduous forest, pine forest, Mediterranean forest, rich meadow, poor steppe, sandy heath, and morainic waste. Yet this diversity is a unit—France. How does this happen?

NOTEBOOK WORK: 45 (See Fig. 19.)

[In drawing a map of France note that the north coast has to start at about the *middle* of the top of the paper: there is a great temptation to start too far towards the top right corner and to forget that a large part of France stretches eastward to the Rhine.]

Draw a map of France to show the main structure as follows:

- (i) Four blocks of old rock: (*a*) the Central Massif, (*b*) the peninsula of Brittany, (*c*) the Ardennes, and (*d*) the Vosges. These were once a continuous block of the same old, igneous rocks.
- (ii) Folded mountains crumpled against this ancient land: (*a*) the Alps, (*b*) the Juras, and (*c*) the Pyrenees. The upheaval of these folds did not leave the old blocks unaffected; already they had sagged into four portions separated by shallow seas, and the Alpine thrust not only exaggerated these sags, but in many cases split the blocks and caused widespread volcanic activity.
- (iii) Three lowlands: (*a*) the Paris basin of the north, (*b*) the half-basin of Aquitaine in the west, and (*c*) the long, narrow corridor in which flow the rivers Saône and Rhône between the Alps and the Central Massif.

(Detailed structural notes are given later: this map is meant to show only the fundamentals.)

The map you have drawn shows that the structural arrangement of France results in a series of lowland areas with the Massif as its centre, the Paris basin being connected to the plain of Aquitaine by the Poitou Gate, Aquitaine to the Rhône Corridor by the Carcassonne

206

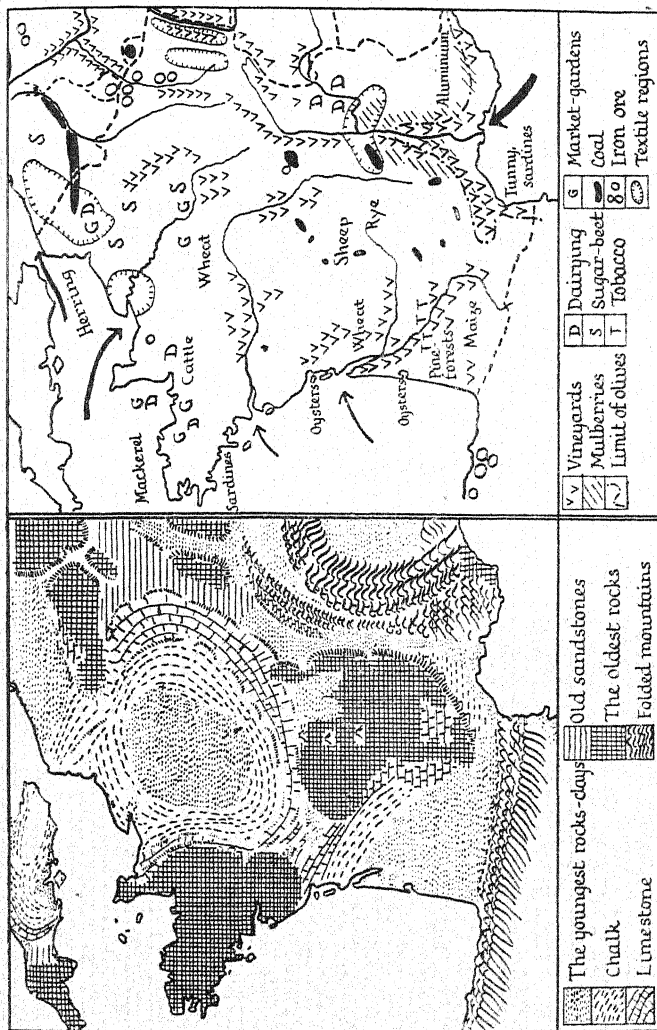


FIG. 19. FRANCE: GEOLOGICAL AND ECONOMIC

A GEOGRAPHY OF EUROPE

Gate, and the Rhône-Saône Corridor leading back to the starting-point. Furthermore, on the northern and eastern sides there are other lowland routes, *via* the Belgian Plain, the Saverne Gate, and the Burgundy Gate, which link this circular track to the rest of Northern Europe. Hence the arrangement of the structure of France leads to the unification of a diversity of regions.

NOTEBOOK WORK: 46

(i) Add the 'gates' to the map of France, and show the main routes by arrows.

(ii) Repeat the map on a much smaller scale, and by its side draw a simple structural map of Germany to show the two main routes of the Plain and the Rhine. These maps will illustrate that all parts of France are on a main circular 'street' or circus, but that large areas in Germany are byways off two streets.

NATURAL REGIONS OF FRANCE

The simple highland and lowland regions of France obviously suggested by the structural map will now be described in more detail in the following order: (a) the Central Massif, (b) the surrounding highlands of block and fold, and (c) the three great lowlands.

THE CENTRAL MASSIF

This region is an attractive area for the sightseer, with its mountains, good hunting in the forests and fishing in the rivers, excellent motor-roads, river trips down exciting rapids in limestone gorges, quaint villages, old costumes, and palatial hotels at famous resorts. But from the point of view of those inhabitants who have to get their bread-and-butter from such surroundings the region is far from attractive. The block is open to winds from the Atlantic Ocean, and in consequence of the height—over 6000 feet in several places—rainfall is heavy, and winter snows lie deep. The rivers, fed by ample rain or melting snow, are

208

FRANCE

unnavigable torrents that have carved deep trenches in the mountains. Rain, snow, summer's scorching heat, and winter's cold have weathered the rocks, but the rapid streams carry their heavy loads of fertile silt far from the mountains before their currents slacken and their soils are deposited. The rocks are granite and other crystalline



TYPICAL 'PUY' COUNTRY IN THE CENTRAL MASSIF

It can be readily understood that such a region is characterized by the emigration of its peasant inhabitants and by a seasonal immigration of tourists.

By courtesy of the French National Touring Office

rocks much broken and fractured, with a few areas of later rocks and lava sheets which make more fertile soil. Except on the steep eastern edge, the Massif is surrounded with porous limestones, with their usual characteristics of gorges, caves, and scanty pasture on the uplands. Such a region cannot support many people, and the tendency has always been for the richer lowlands all round to attract the mountain-folk—as settlers if possible, or to do seasonal work (at harvest-time, for example) for small wages that

A GEOGRAPHY OF EUROPE

will supplement the scanty produce at home. Little fertile valleys yield good crops of wheat and fruit, but most of the wealth of the people consists of flocks of sheep or of lean cattle that are bought by the farmers of the plains to be fattened for town markets. Roquefort cheese is made from ewes' milk in the south; cottage industries like glove-making are fairly common; and the large tanneries at Limoges get many hides from the plateau. Other manufactures associated with the few native products of the Massif are the porcelain from kaolin at Limoges and the carpets at Aubusson.

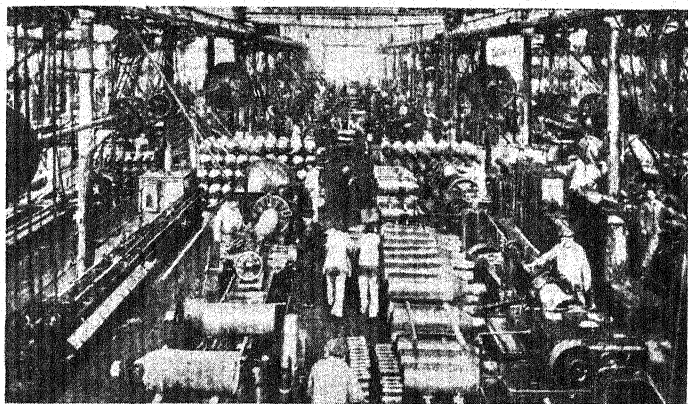
The chief characteristics of the area are its poverty and the consequent emigration of its people. The French lowlands have long had their peasant occupiers, and there is none of this land to spare. A few people from the Massif seek their fortunes in the colonies; but home-ties in France are very strong, and there is little readiness to settle for life in a foreign land. Most emigrants from the region go to the large French cities, where they do much of the poorest paid work for which labour is not readily available, or they become hawkers of petty trifles or hot-chestnut vendors. Large numbers of these people drift to Paris, but they are common also in Lyons, Marseilles, and Bordeaux. In most cases the migration is only seasonal, the people tending their flocks and gardens in summer and seeking extra pocket-money in the cities in winter.

Towns

There are few towns actually on the plateau, but several very important places round the rim. In the centre of Lower Auvergne is Clermont-Ferrand, where the Michelin rubber-works are situated. There is no geographical reason for the growth of the industry here; it is due wholly to the business genius of its founder. (*Cf.* the Morris works, originating in a little garage at Oxford.) Vichy, on the river Allier, is a famous spa.

FRANCE

On the eastern rim of the Massif there are two important basins in which coal-measures occur. The northern one, south of the granite block of Morvan, contains Le Creusot, the Woolwich of France, where the works of Le Creusot-Schneider combine are situated. Local supplies of coal and iron are not now adequate for the furnaces and forges, but the richer coalfield of the north of France and



MAKING HIGH-EXPLOSIVE SHELLS IN THE SCHNEIDER MUNITION-
WORKS AT LE CREUSOT

Photo E.N.A.

the richer ore-field of Lorraine are both too close to possible danger-zones near the Franco-German frontier for a large munition-depot: Le Creusot is central and safe. Farther south, in a similar basin, are Saint-Étienne and its 'street' of smaller towns. In 1800 Saint-Étienne had only 17,000 people; in 1911 the population was 150,000; in 1931 it had grown to 191,000. The coal and iron are used to supply machinery for the silk-mills of Lyons, Saint-Étienne, and many smaller places around; motors, armaments, and glass are also manufactured. To-day there is taking place a rapid development of hydro-electric

A GEOGRAPHY OF EUROPE

power in connexion with silk and other factories more remote from the Saint-Étienne coalfield, particularly on the Alpine side of the Rhône valley, the Saint-Étienne side being in the lee of west winds and rather dry. A more detailed reference to the silk industry and to the sides of the Rhône valley follows at pp. 223, 224. There are also smaller and less important coal pockets on other flanks of the Massif, giving rise to isolated industrial areas—*e.g.*, Commentry, on the northern flank, has iron-works which supply the raw material for the cutlery factories of Thiers, near Vichy. But the largest of the other rim towns is Limoges, which is important partly for its industries and partly as a route-site on the flank of the Poitou Gate. (*Cf.* Poitiers, in the centre of the Gate, and see p. 229.)

NOTEBOOK WORK: 47

Draw a map of the Central Massif and show (*a*) the rivers Rhône, Loire, and Garonne; and (*b*) the Massif between them. Shade the land over 1500 feet. Mark the courses of the rivers Allier and Cher (tributary to the Loire) and the Dordogne, Lot, and Tarn (tributary to the Garonne or Gironde). It is in the upper Lot and Tarn that there are the famous gorges and rapids of the *causses*. Mark (*c*) the Cévennes as a steep eastern edge to the Massif. Put red rings for the *pays*, which are old volcanoes, in the central area. Insert (*d*) all the towns mentioned above, and the two railways that cross the plateau from west to east. Show by broader lines (*e*) the much more important routes that go round the plateau.

ARMORICA: THE WESTERN PENINSULA

The Central Massif presents a steep face to the east, but is tilted more gently to the west. Round the rim of this dip-slope younger rocks, deposited in an ancient sea or more recently by rivers, overlie the old crystalline rocks, which, however, reappear in the western peninsula

FRANCE

of France (see Fig. 19). The gap between the Massif and the western block is quite small at its narrowest part—*i.e.*, in the Poitou Gate between Limoges on the one side and the hills of Vendée, south of the lower Loire, on the other. It must be remembered that the western Armorican block extends south and east of Brittany itself, but the latter is so distinctive a part of France that it will be considered now quite apart from its geological extensions, which will fit more conveniently into two later regions.

Brittany is another land attractive to the tourist but ungenerous to the farmer. It has none of the mountains, volcanoes, and gorges of the Massif, and has undergone much less disturbance through geological time than the latter region. The crystalline rocks are varied with shales. Open to the Atlantic Ocean, backed only by low hills which in general lie in the direction of the prevalent westerlies, Brittany is a land of cool summers with frequent showers and mild winters with heavy downpours during gales. This equable, moist climate encourages deciduous forest or rich green meadow-land in areas where there is sufficient soil for plant-growth. But once more the story of poverty and consequent migration has to be repeated with regard to Brittany, the sea, as in the case of Norway, providing not only another form of livelihood but the inducement to seek new homes across the waters. Breton sailors discovered and explored the St Lawrence region, establishing colonies there; Breton sailors turned pirate and harried the Spanish Main; Breton fishermen still fish as far away as Newfoundland and Iceland; and Breton boys to-day provide most of the recruits for the French Navy and mercantile marine. The story of Brittany is a repetition of the story of England's south-western peninsula. The barren moors, the sea-seeking settlements, the urge to piracy or deliberate wrecking, exploration, colonization, and ocean trade are all repeated. Brest Harbour is another Plymouth Sound, Brest being to

A GEOGRAPHY OF EUROPE

France what Plymouth is to England—a naval base guarding the ocean entrance to the Narrow Seas. The ria at Brest, between two parallel granite ranges that cross Brittany, is the best harbour in the peninsula. The sites of towns and villages are the little bays in the gaps of a stormy coast, many of these fishing villages now making much more money as summer holiday-resorts than from their fisheries. Cider is the 'wine' of the country, and early flowers and vegetables are a staple money-crop.

The north coast has cliffs and little coves, with many rocky islands; tides and currents make navigation dangerous, as they do in the Land's End-Scilly Islands region opposite. The south coast has bars of sand or shingle which enclose lagoons. Sardine-fisheries are important.

Although the land is poor and the settlements seek the sheltered bays of the coast, farming is actually more important than fishing. This agriculture is better described as gardening, for the little areas of arable land are given over to the intensive cultivation of crops that require much spade-work, hand-labour, and special care. Onions, vegetables, flowers, tomatoes, and potatoes are all grown as early crops for the markets of Paris and London. The mildness of the climate enables this type of farming to be successful, but it depends equally on well-organized, rapid communications to centres of population wealthy enough to buy these out-of-season luxuries. Rennes, through which the main railway from Paris to Brest passes, is a central market-town for a dairying and cider region (*cf.* Taunton).

As in the Central Massif, the inhabitants of Brittany emigrate temporarily to big towns in the north of France and to England; in France they do navvying, and in

but England they are well known as onion-sellers. this The Channel Islands belong politically to Britain but or morphologically to Armorica. Their fisheries, seaside rocks, ws, dairying, and market-gardening are similar to

FRANCE

those of the two peninsulas to their west on opposite sides of the Channel. Jersey, Guernsey, and Alderney have all given their names to world-famous breeds of dairy cattle.

NOTEBOOK WORK: 48

Tabulate points of similarity in structure, relief, climate, occupations, people, history, commerce, town-sites, routes, etc., between Devon and Cornwall on one side of the Channel and Brittany on the other.

OTHER 'OUTER' HIGHLANDS

The eastward and southward continuations of the old rocks of Brittany in the Cotentin peninsula of Normandy and in Vendée respectively will be considered later as boundaries of two of the large French lowlands; and similarly the blocks of the Ardennes and the Vosges, in the north-east and east, will be reckoned as a corresponding boundary on the opposite side of the Paris basin from Armorica. There now remain the outer highlands of the south and south-east, the Pyrenees and the Alps. It has already been explained that the Alps are young, folded mountains, quite different in origin and structure from the old blocks. When the formation of the Swiss Alps was described, only the blocks to their north were considered to account for the general east-west folding of the great mountain-chains. The Central Massif of France has acted as an effective buffer against any westward extension of this direction, with the result that the chains of the French Alps are bent round into more of a north-south line (Figs. 19, 25). But complications must occur, especially in the south of the French Alpine region. The Pyrenees are folds too, squeezed up between the Central Massif and the Meseta block of Iberia, and cross-wrinkles of Pyrenean folds, as well as portions of block-formation, occur along the Mediterranean coast of France. The exact connexion between Pyrenean and Alpine formations

A GEOGRAPHY OF EUROPE

is not definitely known; a further reference to the subject will be found at p. 318, where the Mediterranean blocks and folds are discussed as a group.

The Pyrenees

In some respects these mountains resemble Alpine folds, with contorted strata of limestone flanking an inner core of granite and gneiss. The folding on the northern side of the chain is more intense than on the south (*cf.* the northern 'spray' of the broken Alpine wave). Zones of vegetation, with oak and beech forests at the foot of the mountains, pines higher, pastures still higher, and rock slopes at the summits, are similar to those of the Alps, but modified in the drier Mediterranean climate of the east of the range, where scrubby heath-land (*maquis*) is common. U-shaped glacier valleys and cascades from hanging valleys are repeated. But the Pyrenees are much more of an impassable wall than the Alps. The term 'barrier' has already been applied to the Swiss Alps, and of course the mountains are an obstacle to movement between North and South Europe. Nevertheless, history and to-day's commerce show that people have surmounted the obstacle by the many passes which backward-cutting streams and glaciers have etched through the summits of the chains. Although in this book only about half a dozen important passes are mentioned, actually there are many more with good roads in constant use. The Pyrenees lack such passes—the valleys that lead into the mountains on the northern, French flank all terminating in great semi-circular hollows with precipitous walls (*cirques*), which have been formed largely by frost action eating into the rock-walls exposed above ancient glaciers. In consequence routes have until recently always gone round the two ends of the Pyrenees *via* Perpignan or Biarritz, but now new railways have tunnelled the range, linking Pau with Zaragoza and Toulouse with Barcelona.

FRANCE

The sparse mountain population hampers the tourist trade, for although the scenery is magnificent, the distances between inns and the arduous climbs are only for the hardest trampers. The high pastures, not so lush as the Alps or saeters, support sheep rather than cattle; the forests yield chestnuts which are used by the villagers instead of potatoes. Towns are at the seaward ends of the range. In the west, in the country of the Basques, are Biarritz, a famous resort, Bayonne, which exports timber for pit-props from the forests of the Landes, Pau, a central market-town, and Lourdes with its shrine. In the east, on the Mediterranean coast, there are many vineyards. Perpignan corresponds in site to Biarritz.

The French Alps

The frontier of South-eastern France is from the eastern end of Lake Geneva almost due south in a twisting line that follows the crests of the high mountains in the core of the Alps. In this region the Alpine storm broke against the Central Massif, so that the waves are in jagged lines from north to south, with crumpled limestones on the western side (Figs. 19, 25). Throughout the region rivers and glaciers have carved ways which now provide some comparatively easy passes across the barrier.

In the High Alps of Savoie the story of life among the Swiss mountains is repeated—the high summer meadows, the valley cultivation, the dairying, the cottage watch-making, the struggle to live, and the tendency to emigration. Chamonix, at the foot of Mont Blanc, and Aix-les-Bains are famous resorts in this region. In the centre portion of the French Alpine lands Grenoble, a valley town among high mountains but clear of the most impassable and inhospitable area, uses hydro-electric power to run silk-, linen-, and paper-mills, and the cottage industry of glove-making is important; but the

A GEOGRAPHY OF EUROPE

wealthier Rhône valley attracts many mountain peasants permanently or for the winter season to work in the factories of Lyons. The southern Alpine region is a drier sheep-land, but on the mountain edges overlooking the lower Rhône electric power has been harnessed for use in furnaces smelting aluminium (see pp. 249, 382).

The French Juras

Here is a mountain land, a land of folds which hamper communications, a limestone land of poor upland pastures and wooded valleys, a land of little villages and few towns, a land of severe winters, a land of transhumance—*i.e.*, the seasonal movement of people with their flocks and herds—and yet, despite all this, a land that is actually attracting population—a land of immigration, in contrast to the emigration from the Alps, Auvergne, and Brittany. The reason for the difference is that the Juras are also an industrial area, not of large factories with their surrounding crowded streets and grime, but of small, independent workshops and of highly developed home industries. The people of the Juras are mountain-folk who have seen the development around them of centralized industry—the silks of Lyons, the metals of Le Creusot, the wines of Burgundy, the cottons of Alsace, the embroideries of Switzerland, the watches of Geneva, and the toys of the Black Forest. From all these busy concerns the Jura folk have taken a small, humble share, preserving at the same time their independence as peasant farmers. An economic map cannot show the Juras as an industrial region comparable to, for example, the Franco-Belgian coalfield or to the Ruhr or to Lyons; yet among the valleys of the region this great variety of industrial occupations occurs. Watches and choice cheeses are typical Jura produce, but the silks, cottons, and wines become a mere fraction of the large-scale production of surrounding areas whose names are reputed in wide markets.

FRANCE

RHÔNE-SAÔNE CORRIDOR

Recollect again the plan of this study of France: the consideration first of the general structure, next the geography of the 'hub' of the Central Massif, and next that of the highlands around this centre—all of which has now been completed except that, for reasons already stated, the Vosges-Ardenne highlands have been omitted, although some account of this region has been given in other sections. The next and more important areas are three lowlands: the Rhône 'Corridor,' Aquitaine on the west, and the Paris basin in the north. As the Alps and Juras have just been described, it will be convenient to consider first the lowland 'corridor' between them.

The clue to the geography of this region is in the word 'corridor.' It is a passage-way between North and South France, between Mediterranean and North Sea, between two distinctive climates of Southern and North-western Europe, and between high folds and old block. The corridor is not such an evenly wide 'street' as, for example, the Rhine Rift, but is more like the High Streets of many English towns with a narrow bottleneck in the central, busiest part and with wider ends where roads radiate to the surrounding country. The bottleneck at Lyons divides the corridor into two parts. The southern half was once a gulf, now filled with fertile river-muds; the funnel-shape of this section invites entrance from south, west, and east, and then concentrates all northward-moving traffic. The northern half of the corridor was once a lake, the soils of whose bed are the soils of the surrounding hills, and although there is not the same inviting access as in the southern entrance to the Rhône valley, yet here in the north fairly easy routes give communication in almost every direction, the Burgundy Gate giving specially easy connexion to the Rhine Rift Valley.

So the Rhône-Saône Corridor is first and foremost a traffic way, and its big towns are shops that have acquired

A GEOGRAPHY OF EUROPE

the best sites in the thoroughfare. Marseilles commands the seaward entrance, which was shared, in past days, by Arles and Sète (Cette). At the landward end of the corridor there is not one dominating city, as at the south, but several small towns, each situated at an important side-entrance: Belfort guards the Burgundy Gate; Besançon (where Schneider motors are made), the Doubs valley route; and Dijon, the largest town, the difficult but short route direct through the limestone scarp of the Côte d'Or to the Seine basin and Paris. Le Creusot has already been mentioned as a valley town on the edge of the Massif. At the bottleneck in the corridor is Lyons, the third largest city in France, situated at the junction of the Rhône and Saône, with neighbouring coal at Saint-Étienne and with facilities for ample hydro-electric power. Grenoble and Saint-Étienne are on side-streets, but owe much of their importance to the nearness of the busy corridor. Avignon, at the southern entrance to the route but far enough inland to be safe from sea-raiders, was once the seat of the Popes, and Nîmes, between Sète and Avignon, contains the finest Roman remains outside Italy—two towns whose history tells of past users of the great Rhône highway.

NOTEBOOK WORK: 49

(i) Draw a map of the Rhône-Saône Corridor to show routes only, as follows:

(a) The main valley route now followed by the main-line P.L.M. (Paris-Lyon-Méditerranéen) railway.

(b) Side routes on the east—(i) to the Rhine Rift at Mülhausen (railway and canal); (ii) Lyons-Geneva-upper Rhône-Simplon Tunnel; (iii) the direct line Paris-Simplon Tunnel *via* Lausanne, crossing the Juras; (iv) Lyons-Chambéry-Mont Cenis Tunnel-Turin (the line from Chambéry to the Italian side of the tunnel is electric); (v) two routes from the south of the corridor eastward into Italy, by the Durance valley and Grasse and by Marseilles, Toulon, and the Riviera (both routes meeting at Nice for the narrow and difficult coast route to Genoa).

(c) Side routes on the west—(i) to the Loire valley *via* Le Creusot (railway and canal); (ii) Saint-Étienne to Bordeaux across the

FRANCE

Massif; (iii) from the lower Rhône to Bordeaux *via* Montpellier, Sète, Carcassonne, and Toulouse (railway and canal).

(d) Sea routes—(i) from the Far East *via* Suez, (ii) from North Africa, (iii) from West Africa *via* Gibraltar (all meeting at Marseilles, east of the Rhône delta).

(ii) Turn the following passage into a geographical account of the site and importance of Marseilles, with an illustrative map:

The site was chosen in the days of small sailing vessels, and, being virtually on the open sea, affords shelter to large vessels only by a combination of herculean effort and modern engineering skill and means. . . . [Marseilles is] a sort of bridge-head . . . of Spain and Southern Italy, of Africa, and especially of the Levant. . . . It is an Occidental Algiers or Port Said; it is Hong-Kong by anticipation or by memory. . . . Catalans and Spaniards, Corsicans and Sicilians and Italians, Greeks and Armenians, Algerians and Kabyles and Tunisians, one meets everywhere among the landmen; and the mariners are as polygenetic and polyglot as in any other world mart. . . . Ever since the Province became a part of France, the Marsellais have played an important part in the history of their country; . . . they have never been blind to the fact that their particular interests were indissolubly bound up with those of the great nation whose Mediterranean gateway their city had become. . . . Marseilles can receive fifty steamers a day, and is always overcrowded. . . . The opening of the Suez Canal in 1869 put Marseilles on the route to the Far East. . . . At the outbreak of the World War the maritime movement of Marseilles was twenty times that of 1831. . . . A member of the Chamber of Commerce of Marseilles has always been a vice-president of the [Suez] Canal Company. . . . Smaller freight-steamers load and unload in the Étang de Berre. Cargoes to and from Marseilles pass through a tunnel in thousand-ton lighters, skirt the south bank of the lake, and go through a canal to reach the Rhône at Arles. . . . [Some of the imports are] cork, wool, skins, copra, peanuts, gum, palm-oil, mahogany, cocoa, rubber, rum, pineapples, dates, sulphur, eggs, corn, almonds, and cocoons.¹

Think especially of the early importance of Marseilles, of its decline after the discovery of America, and of its subsequent prosperity based on the Suez Canal and on the French colonial empire in Africa and the East. Associate the imports with the

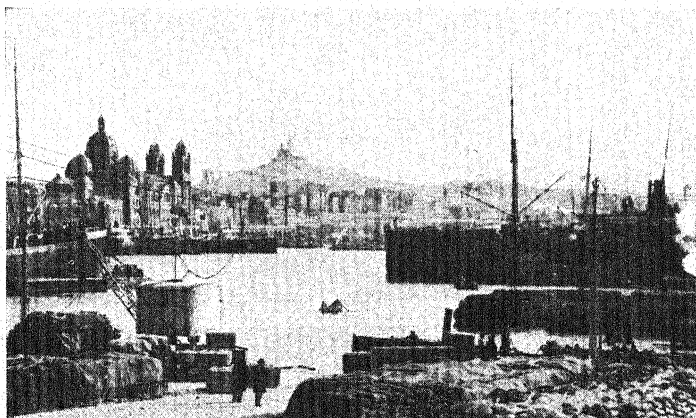
¹ *Ports of France*, by H. A. Gibbons.

A GEOGRAPHY OF EUROPE

town's modern manufactures of leather, soap, oil, chemicals, sugar, iron and steel, and petroleum products (Russian trade). The notes about Bordeaux at pp. 230, 231 will be useful for comparison.

The Mistral

Only a small area in the south of the Rhône valley has a true 'Mediterranean' climate of hot, dry summers and



PART OF THE HARBOUR AT MARSEILLES

Photo Henri Manuel

By courtesy of the French National Touring Office

mild, rainy winters; the rest of the corridor is in the cool-temperate region of Western Europe. The mountains on either side of the valley have severe winters, as already described. Lowland winters are much milder; summers are hot everywhere, but rainless only in the south. It is in the southern half of the region that a local wind called the mistral blows. It is a current of very cold air from the north, set in motion by the occurrence of either low pressure to the south (on the Mediterranean Sea) or high pressure to the north (continental) or a combination of

FRANCE

both. The wind is biting and dry: it sets the natives of the warm South shivering; it makes the Riviera visitors who are seeking winter warmth hurriedly don thick overcoats and wonder why they left home; it blows with enough force to strip and even uproot the evergreen trees; and it will ruin early roses and carnations, grown for northern markets. The mistral is most frequent in winter, when depressions move eastward along the line of the Mediterranean Sea. The average January temperature at Marseilles is 44° F.; the average of minimum temperatures (due to the mistral) is 22° F., and 21° of frost have been recorded—"figures which are not matched elsewhere in Mediterranean climates. Hedges of cypress are planted to protect orchards and gardens from its icy breath and the sites of houses are chosen for their protection from it."¹

Produce of the Corridor

The highway of the Rhône valley and the route-junctions at its towns have been emphasized first, but to these interests must be added the produce of the region itself, so distinctive in some cases as to have attracted the attention of the whole world. On the terraced slopes of the Côte d'Or, overlooking the Saône portion of the corridor, are France's oldest and richest vineyards, which produce the Burgundy of commerce. A special note on the cultivation of the vine follows. On slopes in the centre and south of the valley there are mulberry-trees which gave rise to an originally small silk industry. The skill of the people and the artistry of early designers of the silk fabrics made here have caused Lyons to become to-day the world's leading silk-centre. Only a very small proportion of the silk now used there is produced in the Rhône valley, much more being imported as raw silk or silk thread from China, Italy, and the Eastern Mediterranean.

¹ *Climatology*, by A. Austin Miller.

A GEOGRAPHY OF EUROPE

(Further references to the climatic and economic conditions necessary for silk-production will be found at p. 313.) Many of the silk-mills of Lyons and its neighbourhood (Fig. 21) are so small as almost to come under the heading of cottage industries. Finished wares include satins, velvets, brocades, and the ribbons of Saint-Étienne. Other manufactures in Lyons are electrical machinery and other electrical goods, hardware, motors, and dyes. The slopes of the Cévennes, in the gulf portion of the corridor, are terraced for vineyards, which cover also large areas of the lowlands west of the Rhône as far south as the Pyrenees. The floor of the valley from north to south is fertile farm-land except where, in the central area, Alpine glaciers have deposited stony moraines. Wheat, maize, and fruits like apricots and cherries are widely grown, and the cultivation of the olive extends from the Mediterranean coast up the lowlands almost as far as Lyons. This fertility is in direct contrast to the poor soils of the surrounding mountains, where pastoral pursuits are general, where chestnuts form an important bread-food, and where hardy rye is the chief cultivated cereal. Between these rocky uplands the Rhône Corridor stretches as one long, narrow garden of plenty.

Vineyards

The vine is a climbing plant which, left to itself, grows house-high. In some parts of Italy the grape-vine is still grown on high trellis reminiscent of the hop-fields of Kent. The plant has long roots so that during seasonal drought it can derive moisture from deep subsoils. A hot, sunny summer is essential for the grapes to mature. Thus the vine is most suited to the Mediterranean climate. The northward extension of its cultivation has been achieved only with considerable ingenuity and labour. In lands north of the Mediterranean rainfall is ample, but the necessary warmth and sunshine for the vines occur only

FRANCE

on rather steep slopes with southern aspects. In Southern England some favoured garden-walls are reserved for vines, which, however, never bear the luscious grapes of vines farther south. But between this northern extreme and the vine's native Mediterranean lands hills and mountains often form natural walls climatically suitable for vineyards, and so distinctive is the quality of the vines from such regions that the labour of terracing steep hillsides to make them suitable for cultivation is well worth while. Many southward-facing slopes in Western and Central Europe have been laboriously terraced and the steps overlaid with soil. This fact alone implies that the cultivation of the vine must be associated with regions of dense population to supply ample labour. For the tending of the vines, the harvesting of the grapes, and the making of wine also much more labour with special skill is necessary.

To save much work, vines are now generally allowed to grow only man-high, the plants climbing up short sticks in much the same way as peas and beans do in English gardens. During growth hoeing, weeding, and spraying have to be frequent. Vintage, about September, is a busy time when men, women, and children must all help, and the labours culminate in harvest-festivals, just as they do for other crops in other lands. The primitive wine-press is a tub wherein men with bare legs trample the grapes, the juices trickling out at the bottom, but machine-presses, communally owned, are now replacing this old method.

Of all the wine produced in European vineyards only a very small proportion reaches the world market, the vast bulk being 'ordinary' wine that is consumed in the producing countries. Usually some quality of soil or some special processes of maturing the wine are responsible for the desirable bouquet of famous wines. Champagnes, Burgundies, clarets, hocks, Moselles, etc., in commerce are only a small fraction of total production. In 1933 France produced 1,093,199,000 gallons of wine, but

A GEOGRAPHY OF EUROPE

exported only 14,159,000 (1·3 per cent.), of which about one-twelfth came to the United Kingdom. France actually imports large quantities of wine from Algeria, Italy, and Spain.

NOTEBOOK WORK: 50

Draw a map to show the produce of the Rhône-Saône Corridor and of its immediate highland walls.

MEDITERRANEAN FRANCE

The coastal forms of Mediterranean France show an extraordinary variety in a short distance. In the middle is the low, muddy Rhône delta, an almost uninhabited salty marshland called the Camargue. Currents drift Rhône mud westward, where, along the coast of Lower Languedoc, it has built bars across the bays and enclosed shallow lagoons from which salt is obtained by natural evaporation. Sète is only a small port, more interested in the vineyards of the Midi in its hinterland, importing nitrates from Chile to fertilize the vines, chemicals from the United States for spraying the vines, and wine from Algeria to supplement the enormous but inadequate home-supply. Nîmes (p. 220) and Montpellier are important wine centres. Eastward of the delta, Marseilles is on the first open bay and connected to the Étang de Berre (see p. 221). Farther east the mountains reach the sea, and the coast becomes a line of magnificent cliffs with small, deep inlets. At the southernmost inlet of the French Mediterranean coast, well removed from shifting mud and shallow lagoons, on a bay protected from the mistral by high mountains, stands Toulon, France's chief naval base, guarding her interests in the Mediterranean and policing the sea-routes along which come those important products into the commercial port of Marseilles. Eastward of Toulon, away from its dockyards and the bustle of Marseilles, is the French (and Italian) Riviera,

FRANCE

with Cannes, Antibes, Nice, Monte Carlo, Monaco, and Mentone. The scenery, the mild, sunny winter, and certain freedoms that are not allowed elsewhere have made this coast into a line of palatial hotels and casinos, catering for wealthy visitors from all over Europe and North America.



A VIEW OF CANNES

By courtesy of the French National Touring Office

The fact that the region is chiefly visited by the inhabitants of more northern climates gives rise to a somewhat erroneous impression in regard to the plants. In spring the Mediterranean vegetation is at its best. The mild winter permits the plants which farther north die down or cease to grow to go on blooming. The rains so moisten the soil that the first warm days cause very rapid growth in those plants which must finish their activities before the hot, dry summer begins. They must flower and seed in spring, and die down till the rains of autumn awaken them again. . . . In spring, therefore, the shores of the Mediterranean are

A GEOGRAPHY OF EUROPE

bright with many kinds of anemones, with narcissus, asphodel, bell hyacinth, Allium, tulips, and so on, all awakened by the spring warmth and the spring rains. Accompanying them are many bright-coloured annuals, also in a hurry to race through their life-history before the terrible drought of summer.¹

This account of Mediterranean flowers suggests a source of income: cut blooms are hurried in special trains and even aeroplanes to Paris and thence to London, where they form a cheap and welcome luxury. Grasse, in a sheltered valley behind Cannes, is the centre of the perfume industry, whose products from cultivated violets and carnations or from the semi-cultivated lavender on the dry hills go mainly to Paris. Olive-oil is sent to the factories at Marseilles, but the orange- and lemon-trees characteristic of scenery along the Riviera are somewhat outside their true climatic zones and are grown more for blossoms or as an attraction to tourists than for their fruit.

Corsica is an isolated and very backward island-block of little economic importance. Chestnuts, wine, and olive-oil are typical products.

[The Mediterranean climate and products are described in more detail at pp. 303-317.]

THE WESTERN LOWLANDS: AQUITAINE

[The area to be studied in the following exercises is more than the old province of Aquitaine, and includes all the land between Brittany, the Central Massif, and the Pyrenees.]

NOTEBOOK WORK: 51

(i) Draw a map to show the western lowlands. Put in (a) the coast between the mouth of the river Loire and the Spanish frontier in the south. Next insert (b) the river systems: (i) the Garonne, flowing from the Pyrenees, with the tributaries Lot, Aveyron, and Tarn from the Massif; (ii) the Dordogne, with

¹ *Modern Geography* ("Home University Library"), by M. I. Newbigin.

FRANCE

tributaries in parallel courses, from the Massif; (iii) the Gironde, the estuary of the united Garonne and Dordogne; and (iv) the lower Loire, also with tributaries from the Massif. Mark (c) the Pyrenees distinctively as folded mountains with a steeper flank on the north. The other hills and mountains surrounding the western lowlands are block-formations: (i) in the north the old rocks of Brittany are continued south of the river Loire in Vendée, between the Loire and La Rochelle southward, and eastward to about half-way between the river-mouth and Tours (the physical map in the atlas shows only the higher ground in the centre of this block); (ii) the western edge of the old rocks of the Massif follows approximately the 1000-feet contour from the mountain bulge of Limousin, in the north, towards Carcassonne, in the south, in the narrow gate between the Massif and the Pyrenees; (iii) very young rocks occupy the lower basins of the rivers Garonne and Dordogne; (iv) the hill-land (600–1000 feet) is a rim of limestone and chalk around the Massif (Fig. 19).

The map should now show two gates—(i) the Poitou Gate in the north, linking the two lowlands of the Paris basin and Aquitaine on each side of an Armorican 'saddle'; (ii) the Carcassonne Gate in the south, linking Aquitaine and the Rhône Corridor. Mark (d) the following groups of towns along the two obvious lowland routes shown by the map: (i) Orléans, Tours, Poitiers, Angoulême, Bordeaux (notice how evenly spaced they are—the 'stages' of a coach journey); (ii) Bordeaux, Toulouse, Carcassonne, Avignon. Show the Canal du Midi. Now mark with arrows (e) the two main sea entrances: (i) the mouth of the Loire, and (ii) the Gironde.

(ii) Repeat the map drawn in Exercise (i) showing rivers, structure, and towns, but without names. This map will be used to show products.

First, the region has two means of livelihood—the land and the ocean; at one time the latter was more important, but to-day the whole area from north to south (even including Brittany) is more agricultural than maritime. In marking the following products it should be borne in mind that the region has a cool-temperate climate; winters are everywhere mild, summers cool but warmer in the south, and rainfall is ample at all seasons. The map already shows three geological regions that will affect produce and occupations.

A GEOGRAPHY OF EUROPE

Vineyards. (a) From Bordeaux eastward and northward on the lowlands, as far as the old rocks of Vendée. (Name the Médoc Peninsula.) This is the foremost wine-area in the world, the land of claret, Médoc, and Graves. Other wines are imported from Languedoc (perhaps these vineyards can be shown too) and Algeria. (b) Along the Loire valley between Orléans and the mouth—the land of Saumur. (c) Cognac, which gives its name to brandy, is a small town just west of Angoulême.

Cereals. (a) Wheat round Poitiers; (b) wheat, maize, and oats round Toulouse; (c) maize especially in the extreme south-west, behind Bayonne; (d) rye on the Massif, in its valleys.

Other Agricultural Produce. (a) Plums (for prunes) in valleys on the south-west edge of the Massif, and also north of Bordeaux; (b) tobacco south-east of Bordeaux.

Animals. (a) Sheep on the Pyrenees and on the Massif (Roquefort cheese); (b) cattle on the western edge of the Massif are bought by the lowlands for fattening; dairying is important in Vendée (cf. Brittany); (c) pigs in the forests of the Lower Pyrenees or the Western Massif. Chestnuts from these forests are an important bread-food.

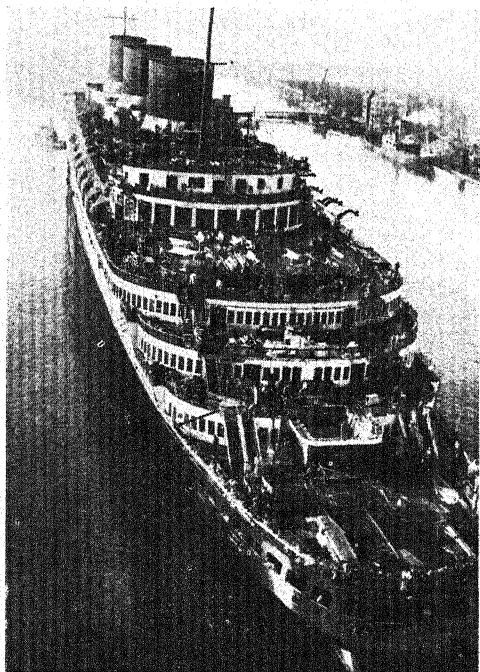
The lowlands are thus areas of most intensive cultivation, with hedgeless fields chequered into varied colours by their different crops, a land of little villages or only small market-towns; but the whole region is long enough from north to south to show a marked difference between the cool green north and a drier, hotter, sunnier south, where white houses, flat roofs, ox-drawn carts, sombreros, and bull-fights tell of that distinctive Mediterranean Europe just across the Pyrenean wall. Around these rich lowlands is a broken land of hill and valley, certainly not so fertile on its uplands of limestone or chalk, but nevertheless a pleasant land of mixed farming, and with quieter, quainter villages removed from the busy commerce on the lowland main street. Beyond the hills rise the ungenerous mountains. To the west of all is the ocean.

(iii) Turn the following brief notes into an orderly essay:

Bordeaux. (a) Originally prosperous farm-folk on fertile lowland; good harbour, but estuary led out to open ocean and nowhere else; Roman cultural centre rather than port; English possession for over three hundred years; one of the last parts of France to become French. (b) Discovery of New World; new outlook to west; Gironde harbour; prosperity of Bordeaux from slave-trade, cane-sugar, and spices. (c) Abolition of slave-trade; manufacture of beet-sugar; decline of Bordeaux shipping; the fertile low land still had its prosperous farmers. (d) French American colonies

FRANCE

lost; new French empire in East; Suez Canal; rise of Marseilles—further decline of Bordeaux. (e) New prosperity; trade with South America, Morocco, and West Africa; bigger vessels; outport of Pauillac. (f) Factories to-day refine petroleum and sugar; leather goods; iron and steel at Pauillac (coal from South



THE "NORMANDIE" BEING FITTED OUT AT SAINT-NAZAIRE

Photo E.N.A.

Wales as return cargo for pit-props from the Landes),¹ (g) Wine trade.

¹ "Within a century an area of shifting sand-dunes and marshes in the south-west of France (the Landes) . . . has been turned into a profitable pine-forest, yielding rosin, tar, pitch, turpentine, and other products. These are made from small trees which are bled to death in the process, and the trunks sent to England to serve as mine-props. This thinning promotes the growth into sawlogs of the trees that remain."—*Industrial and Commercial Geography*, by J. Russell Smith.

A GEOGRAPHY OF EUROPE

(iv) On the Clyde the new giant Cunarder, *Queen Mary*, has been built; on the Loire, the great *Normandie*. Compare the two regions in map form to show their facilities for ship-building. For the Clyde you must refer to other books or past notes you have made. For the Loire the facts are somewhat as follows:

Nantes is an old port, far up the estuary, which, however, silts badly. Saint-Nazaire is a new outport; here the *Normandie* has been built. Local supplies of iron-ore originated furnaces here, but to-day almost all the materials for shipbuilding have to be brought from afar—coal from Northern France or from England, ore from Spain, and timber from Sweden. Compared to the facilities on the Clyde, the shipbuilding at Saint-Nazaire is uneconomic and is carried on mainly with the help of State subsidies.

The story of Nantes is a repetition of the ups and downs of Bordeaux's fortunes (America, the slave-trade, Suez, etc.). Factories in the city now can sardines and vegetables, make bottles for the wines of Saumur, and biscuit-, chocolate-, soap-, and oil-works are important.

Other industries of the western region are much smaller: paper-mills at Angoulême and Toulouse, leather-works at Toulouse, woollen mills at Carcassonne, and coal-mines at Decazeville. The shallow lagoons of the coast have oyster-fisheries (Arcachon). La Rochelle was once as important a port as Nantes or Bordeaux, but it has never recovered from the vagaries of fortune as the other two cities have. Rochefort is a naval base between Brest and Bordeaux.

THE PARIS BASIN

This is the last of the regional units of France, the largest, and the most important. In this book it will include rather more than is usually called 'Paris basin' so as to reduce the number of regions. Consider what parts of France still remain to be described: all east of Brittany and west of the Rhine, the industrial area of the Belgian border (previously studied, but not in this section), all north of the Poitou Gate and north of the Central Massif and the Côte d'Or—a big area with Paris as an obvious centre.

The Vosges, the Ardennes, Brittany, and the Massif

FRANCE

are all parts of one old block that has sagged to form a shallow saucer within which different layers of rocks have been deposited, one on top of another, in the seas and lakes that at various times have filled the hollow. But after this simple sandwich arrangement had been completed the saucer was subjected to the distant effects of the Alpine 'storm.' The rims on the south and east were tilted upward, making the saucer much more of a basin, and the horizontal layers of the basin suffered denudation, particularly on the higher edges. Thus to-day we find the older rocks at the outer rims and newer rocks towards the centre, with consequent variations of soil, exposure, and product.

NOTEBOOK WORK: 52

(i) Draw a diagrammatic section across Northern France from west to east, to include the Paris basin and continue across the Rhine Rift to South Germany, showing in order from west to east: (*a*) the old worn hills of Armorica; (*b*) a narrow limestone ridge with a western scarp; (*c*) two chalk ridges ('lower' and 'upper' chalks) with western scarps; (*d*) the central clays (too soft to have scarps); (*e*) two chalk ridges as before, but now with eastern scarps; (*f*) limestone, now as three ridges with eastern scarps; (*g*) an area of old sandstones; (*h*) the old, worn Vosges with an eastern scarp (much higher than all the previous hills); (*i*) the Rhine Rift; (*j*) the Black Forest, with a western scarp as high as that of the Vosges; (*k*) old sandstones; and (*l*) limestone with a western scarp. Insert a key to the rocks, and name as many features as you can. (See Fig. 16.)

(ii) Draw a more complicated section from south-east to north-west, from the Swiss Alps to the Cotswolds, with the Paris basin in its centre. It is intended to show the diminishing effects northward of the Alpine storm—the Alpine breakers, the Jura waves, and the ripples of the basins beyond. Mark the following in order from south-east to north-west: (*a*) the high, crumpled Alps; (*b*) the narrow Swiss Plain; (*c*) the very regular waves of the Juras, ending in a scarp facing north-west; (*d*) the Saône hollow; (*e*) the

A GEOGRAPHY OF EUROPE

limestone (Jurassic) Côte d'Or, whose scarp faces the Jura scarp; (f) chalk hills with a south-eastern scarp; and (g) the central clays of the Paris basin. Now comes a rather complicated portion. When the centre of the basin is reached the various strata ought to start reappearing in a reverse order, which they do, but in England as the Chiltern Hills and the Cotswolds with scarps facing north-west. The middle of this great basin between the Côte d'Or and Cotswolds has bulged upward in the centre to form the arch of the North and South Downs. The London basin is north of this arch, between the North Downs and the Chilterns, but the English Channel has flooded part of the southern downfold of the arch. The chalk of the South Downs and the Hampshire Downs reappears, however, across the Channel on the north coast of France. Reverting to the clays of the Paris basin, in order northward from here the section will show: (h) chalk hills; (i) the English Channel; (j) chalk hills of (h) again, but now as the South Downs with a northward-facing scarp; (k) the upward bulge, or 'dome,' of the Wealden sandstones; (l) the North Downs with a southern scarp; (m) the clays of the London basin, (n) the chalk of the Chilterns with a northern scarp; and (o) the limestone of the Cotswolds. Now join up similar strata to show the general arrangement of upfold and downfold.

(iii) Draw a section from south-west to north-east, from the Poitou Gate to the Belgian border. This time start with Paris in the centre. On either side are the clays, and beyond them chalk hills with outward-facing scarps. Beyond these, again, there are narrower ridges of limestone, the northern of which is pressed against the old rocks of the Ardennes, on whose farther side coal outcrops; but the southern limestone is a broken formation on the saddle between Armorica and the Massif, which are united beneath the limestone.

Between the Rhine and Paris

Some general considerations may first be noted. The areas of old rocks are highlands except in Armorica. Their height and inland position give them severe winters with much snow, but in summer they are pleasantly cool. The thin soils often support forests, but allow little or no

FRANCE

agriculture. Limestone hills are also regions of meagre agricultural resources, for the porous nature of the rock allows moisture to drain away too rapidly from the surface. Upper slopes have pastures suitable for sheep, lower slopes are often forested; the stone is useful for building purposes. Chalk hills are similar in their dry pastures, but are different from limestone hills in appearance, for whereas the latter weathers along natural joints into steep cliffs, the former are characterized by smooth roundness. Where either chalk or limestone adjoins clays the resultant mixture of soils is generally fertile. The deep and arable clays of the central basin are admirably suited to support cereals, and their water-holding properties cause lush meadow-lands for milch-cows; the natural forests and thickets have mostly been cleared except where sandy, infertile patches of soil are useless for agriculture. (Refer again to the climate figures of Brest and Paris given at p. 38.)

The country between the Rhine and Paris has an importance from two different and, in some respects, contradictory points of view. It contains some very busy industrial areas and some particularly rich agricultural land, but at the same time it also contains the most vulnerable part of a frontier between two countries whose differences seem almost irreconcilable. We will consider first how natural resources have been developed to add to the wealth not only of this region, but of all France and of distant parts of the world; and then how other factors have frequently led to the destruction of this wealth in the folly of war.

Fig. 20 shows the crowded Rhine 'street' and even more crowded Belgium, but this chapter is concerned only with the areas of Fig. 20 that are in France. Of these some, like the north-eastern coalfield and the Rhine Rift, have already been described, so that now it is only necessary to revise certain essentials with reference to France as a country. Northern France between the river

A GEOGRAPHY OF EUROPE

Somme and the Belgian border was a zone held in the last war mainly by British troops, who soon learned to recognize there two types of country—one a soggy horror

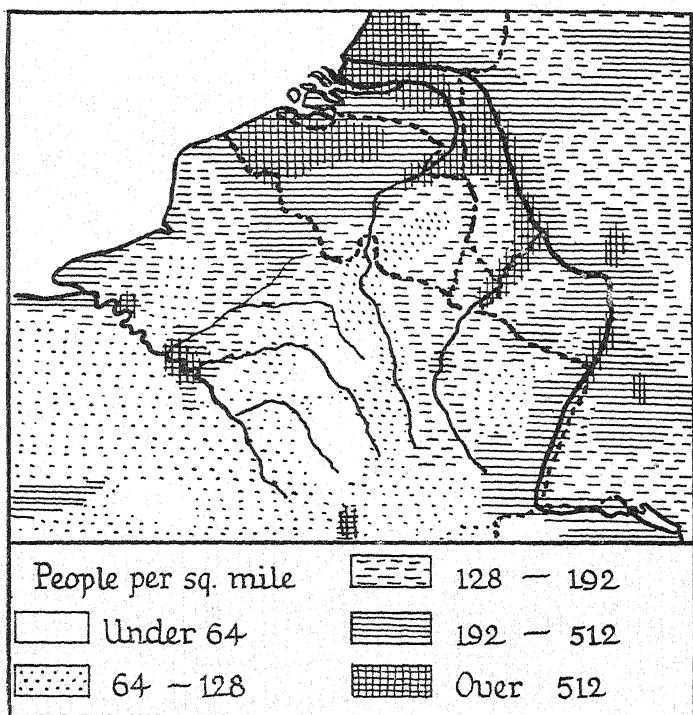


FIG. 20. BETWEEN PARIS AND THE RHINE: DENSITY OF POPULATION

that was to them 'Flanders,' and the other a dry chalk-land of which they sang, "Roses are blooming in Picardy." There were no war-songs of the beauties of Flanders. The poppy emblem of Armistice Day is the poppy of the Picardy cornfields. Both lowlands and uplands in this war zone were places of many patchwork fields, little farmhouses, and many small villages, all of which were

FRANCE

churned, smashed, and resmashed by thousands of tons of exploding shells during four years of ghastly destruction. To-day, at enormous cost and labour, the damage is repaired: the elaborate drainage canals of the 'hollow land' of Flanders, the wrecking of which was the cause of the waterlogged trenches with their devouring mud,



A TYPICAL VIEW IN FLANDERS

The very flat land is prevented from becoming a useless swamp only by elaborate diking and the use of windmills to pump out water. During the Great War land like this within the battle-zones soon became an impassable morass due to the destruction of the drainage system.

By courtesy of the Belgium-Luxembourg Touring Office

have been replaced; the unwearying peasants have toiled to redress the topsy-turvy arrangement of soils due to millions of explosions; brand-new villages have arisen, less picturesque than the old but much more sanitary; saplings struggle where ancient woods once grew; the tangled winding-gears of the old pit-heads are replaced with new machinery; and Northern France lives again. Oats, rye, hops, beet, and flax—crops of a cool, cloudy climate—thrive on the lowlands of Flanders, sheep on the chalk hills, market-gardens in the Picardy valleys,

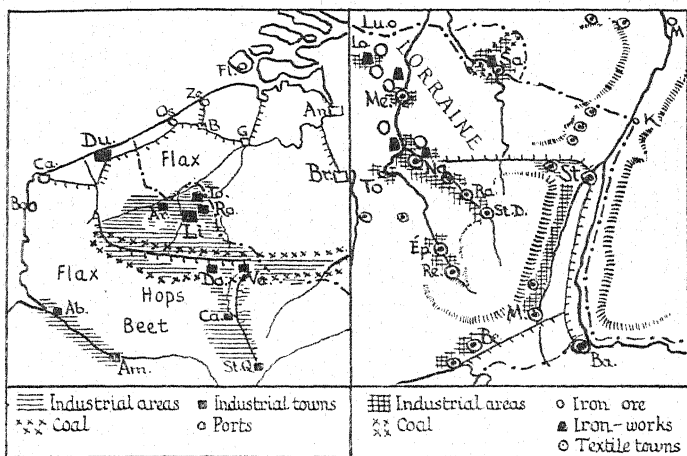
A GEOGRAPHY OF EUROPE

and dairy cows everywhere. The coalfield produces two-thirds of all the coal raised in France. Lille, Roubaix, and Tourcoing together form a great textile centre for linen and woollens; Douai makes locomotives; Amiens velvets; and Valenciennes lace. (Fig. 21; also see pp. 142-149.)

Dunkirk is the commercial port of this industrial region, importing wool, cotton, jute, and timber, and exporting coal and cloths. Within the town are factories making various textiles, petroleum refineries, and iron-foundries. In 1934 only Marseilles, of commercial ports, had more tonnage entering and leaving—*i.e.*, omitting ports of call of the mail-steamers and the termini of large passenger services. Thus Dunkirk is a busier port than Bordeaux. Calais and Boulogne are ports connected with Dover and Folkestone respectively across the Narrow Seas. Boulogne is the leading fish-port in Continental Europe.

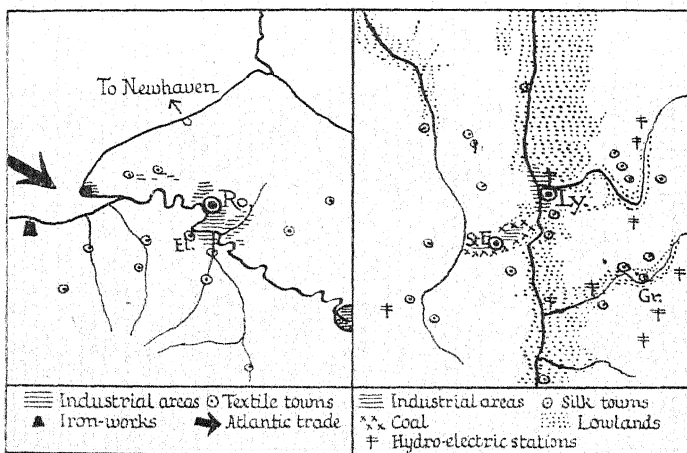
Alsace and Lorraine

Here is another industrial region in a very different setting—among limestone scarps, around the pine-forests of the Vosges, by the terraced vineyards of the Rhine and Moselle or the hop-fields and orchards of the Rift (Fig. 21). Lorraine enjoyed little industrial prosperity until after 1850. The vast deposits of iron ore in the limestone were known, but their phosphoric impurities prevented exploitation. When, however, scientists overcame the difficulty of using this ore in steel manufacture the region grew busy and wealthy. After the Franco-Prussian War Lorraine, then in its infancy as an industrial region, was ceded by France to Germany. The acquisition of Lorraine ores by Germany just at this time when industrialization was making rapid advances in Western Europe contributed in a large measure to that country's growth as a great world-power, Ruhr and Saar coal with Lorraine ore forming a favoured economic and political unit. The



The Largest French Industrial Region after Paris

Alsace-Lorraine



Rouen—the Manchester of France

The Silk Region of Lyons

FIG 21. FOUR TEXTILE REGIONS IN FRANCE

A GEOGRAPHY OF EUROPE

restoration of Lorraine to France after the last war has split this unit, causing a decline in steel production in Germany, but a rapid rise in France, with the advantage of Saar coal till early in 1935 and increased coal-production also from new pits in the Nord.

A secondary iron- and steel-manufacturing area has arisen on the ore-field, using coal brought by ore-trucks returning from the coalfields (Ruhr, Saar, or Franco-Belgian). Nancy, Longwy, and Briey make heavy metal goods of various kinds. Deposits of salt, sand of the sandstone to the east, and certain clays give rise to glass- and china-works in the same region.

On both flanks of the Vosges there is a busy textile industry, especially in cottons—for example, at Mülhausen on the one side, and at a number of smaller towns, Belfort, Épinal, Saint-Dié, Raon, etc., on the other. Hill pastures with sheep, waterfalls, and mill-sites were no doubt the origin of a woollen industry in the area; the change over to cotton has occurred comparatively recently. It developed first at Mülhausen, where the import of raw material *via* the Rhine was easiest, and the spread of the industry to the western (French) side of the Vosges occurred only when refugees from the German occupation of Mülhausen in 1871 crossed the mountains.

Strasbourg, as a route centre, as a Rhine-Ill port, as a canal port *via* the Saverne Gate, and as a gap town on the Orient Express route, has already been mentioned (p. 171). The trade of the city is particularly in coal and cotton for the Alsace mills.

Champagne

Between the Meuse and Moselle lands of limestone scarps, on one side, and the Paris clays, on the other, is a dry land of chalk hills and scarps, Champagne—the country of *champs* (*i.e.*, grassy fields, as distinct from the forests to east or west) (Fig. 15). Sheep are associated

FRANCE

with chalk uplands, and the woollen industry still survives at Troyes (hosiery) and Reims. (*Cf.* Norwich, its early wealth from wool, and its cathedral.) More important than wool to-day are the vineyards and the manufacture of champagne. These vineyards are south of Reims, on the arc of the *falaise* ('scarp') of the Ile-de-France—*i.e.*, the central clay. The chalk-lands farther east are either too dry (the upper chalk) or too wet (the lower chalk being a compact formation on which stagnant ponds are frequent). The special qualities of champagne are due only partly to the soil and the northern site of the vineyards, and mainly to elaborate maturing in cool cellars hewn out of the neighbouring chalk hills. In this connexion it is of interest to note that in the Chiltern Hills of England an industry has been started which imports grape-juice (not matured as wine) and proposes to turn this raw material into 'champagne' within chalk vaults in the hills.

Between Armorica and Paris : Normandy

Normandy is not only the Cotentin Peninsula, but an area stretching eastward from its west coast across the lower Seine to beyond Dieppe: the Germans call the Channel Islands Normännische Inseln. The whole Cotentin Peninsula is part of the Armorican block; immediately to its east is a narrow limestone ridge which reappears across the Channel at Portland Bill; chalk uplands occur on both sides of the lower Seine. Normandy is a land of mild climate with little cultivation, but where dairy-cattle, horses, pigs, and poultry are important. Orchards of cider-apples occur towards the west. The largest towns are the ports, which lie at openings in a treacherous coast of chalk cliffs, sandy shoals, and granite rocks. Of such openings the Seine mouth is quite the most inviting. At its very entrance is Le Havre—'The Harbour' of the Seine and of Paris, the second port of France, outrivalled only

A GEOGRAPHY OF EUROPE

by Marseilles. The prosperity of Le Havre began only with the days of big ocean liners, since by its position it was more easily adaptable to the new conditions of shipping than the older and bigger ports farther from the sea and therefore with shallower water. Le Havre is a ter-



A FARMYARD IN NORMANDY

Normandy is a dairy-land of cool, green pastures and an orchard-land of apples and cider. Compare this little farm with those shown at pp. 49 and 194.

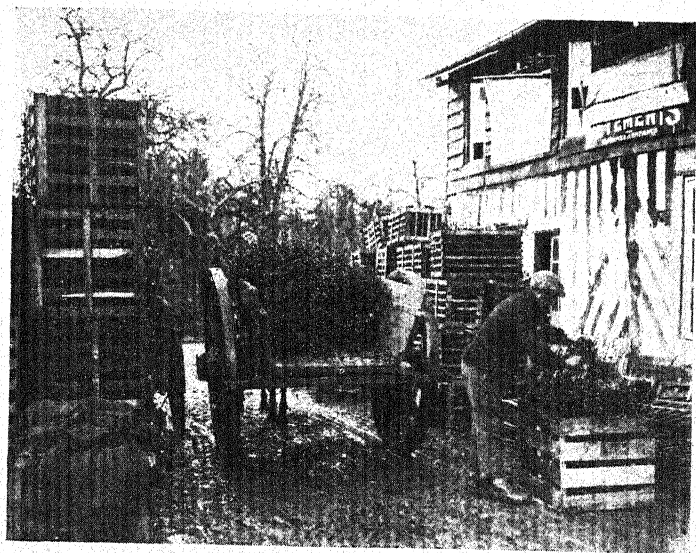
By courtesy of the Southern Railway

minal port and a port of call for many great lines of ocean steamers, connecting with Southampton. But though passenger-boats comprise most of the tonnage of the port, Le Havre is a busy commercial centre, dealing with imports of cotton and coffee especially.

Dieppe is a port in a gap of the chalk cliffs, and a fashionable *plage*. Caen was William the Conqueror's port, on a little river that was navigable for the boats

FRANCE

of those days, but to-day as a port it is insignificant, though it has busy steel-works, started during the last war, using local ore in the limestone ridge, and importing coal from England. Cherbourg is now more or less an artificial port, maintained mainly as a naval base guarding



PACKING MISTLETOE NEAR HONFLEUR, AT THE MOUTH OF THE
RIVER SEINE

This is one of the luxury branches of gardening (e.g., the carnation trade of the Riviera, the daffodil trade of the Scilly Islands, the forced-tomato trade of Holland), all of which rely on the comparative wealth of many people in big capital cities and large provincial towns.

By courtesy of the Southern Railway

the Narrow Seas, but also as a calling-place for transatlantic liners.

In and round Rouen is yet another important cotton-textile area of France (Fig. 21), and again the origin of the industry has to be sought in the pastures of the surrounding chalk hills, cottage industries in woollens,

A GEOGRAPHY OF EUROPE

and little mills with waterwheels. The story is repeated of the inventions that heralded the Industrial Revolution, of a sudden change to large-scale production, and of the turn-over from woollens to cottons. Rouen faced England, where this industrialization developed first and to its greatest extent, and the people of the old town soon sought similar possibilities of increased production and quick wealth from the little mills around. But the young rocks of the district contained none of the necessary coal for driving the steam-engines. However, English merchants were only too willing to sell coal, engines, looms, or anything else. The largest French coalfield soon began to develop not far away, and the western outlook of the Seine mouth invited imports from America. Thus Rouen became industrial. But this textile area is distinctive, since the little mill towns are not blatant, upstart children of industrialism, but retain a rural charm despite their factories. There has been no centralization of workshops, with the consequent sprawling growth of mean streets and factory-blocks over the countryside. Rouen's surroundings of farm-land, winding river, and preserved forest are still unspoiled; and although Rouen is a busy industrial town and a large port, nevertheless its cathedral and neighbouring streets, reminiscent of Exeter or Norwich, have a staid courtliness that belongs to a bygone age.

NOTEBOOK WORK: 53

(i) Draw a map of the English Channel to show on both sides the ports of the Narrow Seas, the larger ports for ocean liners, and the naval stations; mark also the railways giving rapid connexion between the ports and London or Paris.

(ii) Shade a map of France to show the hinterlands of Marseilles, Bordeaux, Nantes, Le Havre, and Dunkirk.

The South of the Paris Basin

Between the Central Massif and Paris the same concentric arrangement of geological formations repeats itself,

FRANCE

but, instead of the rivers flowing towards the central hollow as one would expect, here the middle Loire cuts a great bite out of the southern basin, going first northward through limestone and chalk gaps to the central clays and then bending westward to leave the basin through other chalk and limestone gaps. Berry, on the northern edge of the Massif, is a broken land of infertile limestone, the scarp formation of which is, however, seen at its best in the Côte d'Or farther east, between the rivers Loire, Saône, and Seine. Morvan, between these two limestone lands, is a northern extension of the crystalline rocks of the Massif. The lowlands of the middle Loire are one of the most fertile areas of France, the clays having been lightened and fertilized by drainage from the varied geological formations around. Touraine is the 'Garden of France'; Orléanais is the land of *châteaux*—i.e., palaces rather than fortresses. Vineyards line the river Loire as far upstream as Orléans, to be continued eastward, with only a small break, in the vineyards of Champagne. The middle Loire is well removed from the raw climate of Northern France and from the cloudy mildness of Brittany; its inland position gives it cold winters, but hot and sunny summers. Orléans is at the northern bend of the river Loire where the great lowland road and railway to Bordeaux reach the valley from Paris. Tours stands where the Loire valley route forks, either to continue downstream to Nantes or to use the Poitou Gate to reach the south. Both towns have small woollen industries and Tours makes pottery, but they are less industrial than residential and palatial, with the faded glory of past monarchies.

Paris

Lastly, there is the focus of the whole basin and of all France—Paris. The maps to be drawn in the following exercises will illustrate various aspects of its site.

A GEOGRAPHY OF EUROPE

NOTEBOOK WORK: 54

(i) Draw a map of the river Seine and its tributaries and note the following points about the site of Paris with regard to this river-basin:

(a) It is central; (b) it is not so far upstream that the river is narrow and shallow; (c) it is not so far downstream that the river's width and meanders become a barrier; (d) it is at that one point on the main stream where it can take advantage of more than one tributary route; (e) it is at a point where an island in mid-stream originally provided a natural fort; (f) it is the centre of the most fertile part of the basin.

Mark other town sites in the Seine basin and compare them with Paris.

(ii) Draw a map to show next a somewhat larger area than the Seine basin only, so that you may see if any of those tributary routes which focus on Paris have connexions wider than the rims of the basin. Show as far as the Rhine, the middle and lower Loire, and the Saône. Put in the highlands that seem to be definite barriers—the Ardennes and Eifel, the Hunsrück, the Hardt, the Vosges, and the Central Massif. Suggest with lighter lines the circles of limestone and chalk hills. Both these rings are much broken where rivers have cut gaps similar to those in, for example, the Downs at Maidstone or Arundel, and the Limestone Ridge at Lincoln or Bristol. That is why the encircling lines should be light, suggestive only of possible barriers. Now follow the courses of the Seine tributaries in turn upstream to see if their valley routes give easily on to other routes, and mark the following with arrows always pointing *towards* Paris: (a) Oise-Sambre-Meuse-European Plain; (b) Marne-Saverne Gate by two routes—(i) Verdun and Metz, (ii) Toul and Nancy, at the Meuse and Moselle crossings; (c) Seine-Yonne-Dijon (a steep drop here); (d) Seine-Aube-upper Marne-Burgundy Gate; (e) Seine-Loing (a small tributary of the Yonne)-Loire; (f) Paris-Orléans (straight across the clay centre of the basin); (g) Seine-Rouen-Le Havre; (h) Paris to the west.

(iii) Finally, draw a map to show Paris as the only focal point of all the diverse regions which together form France. The names of the various railway systems are: (a) *P.L.M.*,

FRANCE

from Paris to the Mediterranean coast; (b) *Orléans*, from Paris to Toulouse, Bordeaux, Nantes, and Brest, *via* Orléans; (c) *Midi*, between Atlantic and Mediterranean *via* Toulouse; (d) *État*, from Paris to Dieppe and Le Havre, Cherbourg, Brest, and Bordeaux; (e) *Est*, from Paris to the Rhine Rift; and (f) *Nord*, from Paris to Boulogne, Calais, Dunkirk, and Lille.

Paris and France

Paris is focal—the political, intellectual, and commercial capital of those diverse regions which are France; it is the leading industrial city, with manufactures of motors (Delage, Hotchkiss, Peugeot, Renault, and Voisin are some of the makes), musical instruments, paper, metal goods, and ‘Parisian’ goods; it is the fashion centre of the world; it is a large port at the limit of navigation on the Seine and at the centre of a busy canal system; it is more than the capital of France—it is the route centre of the railways and airways of Western Europe.

But although all France looks to Paris, Paris is not France. France is a land of peasant farmers, with only one area where industry has ousted agriculture, and that is Paris. Industrial though Lille, Lyons, and Marseilles may be, they are immediately backed by areas of most intensive cultivation. In England and Wales nearly 46 per cent. of the people are employed in factories, and only about 7 per cent. in agriculture and fisheries; in France the figures are 36 per cent. and 38 per cent. respectively; in Poland 9 per cent. and 76 per cent. respectively. England represents extreme industrialization; Poland represents mainly the age before the Industrial Revolution; France, a western country with coal and iron, has maintained an even course between two extremes. The strength of France lies not in factories, not in world trade, and not in a great overseas empire, but in her peasants, to whom their farms mean everything. The characteristic of these people is unstinting work, humble living, simple

A GEOGRAPHY OF EUROPE

contentment, and a thrift that is almost a vice. The tricolour, a revolutionary cockade, the *Marseillaise*, a shaven poodle, a poilu, a midinette, and pistols for two—these may symbolize France for the outside world, but far more French than any of these are a bent peasant and his frugal wife.

SOME STATISTICS ABOUT FRANCE

For comparative area, uses of land, comparative population, and occupations see Figs. 26, 27.

[French *départements* are geographical units whose boundaries are based as often as possible on the water-partings of main streams and tributaries. Thus along the river Garonne there are *départements* of Gironde, Lot-et-Garonne, Tarn-et-Garonne, Haute-Garonne, and Ariège (a Pyrenean *département* around the river Ariège). It is worth studying closely the boundaries throughout one large river-basin.]

COMMUNICATIONS (1933)

Railways (miles)

État	5,667
Nord	2,357
Est	3,009
Orléans	4,881
P.L.M.	6,180
Midi	2,678

Rivers and Canals

6088 miles of navigable waterways, carrying
over 53 million tons of freight annually.

CERTAIN CROPS IN 1934, IN 1000 TONS

Wheat	8,359
Oats	4,155
Barley	1,137
Rye	829
Potatoes	14,822 (1933)
Beet	7,461 (1933)

FRANCE

PRODUCTION OF WHEAT IN EUROPE IN THE YEAR 1933 OR 1934, IN 1000 TONS

France (1934)	8,359
Italy (1934)	6,330
Germany (1934)	4,532
Spain (1933)	3,762
Rumania (1933)	3,240
Yugoslavia (1933)	2,628
Poland (1933)	2,174
Czechoslovakia (1933)	1,983
Hungary (1934)	1,680
Bulgaria (1933)	1,540

PRODUCTION OF WINE IN EUROPE IN THE YEAR 1934, IN 1000 HECTOLITRES

France	77,000
Italy	30,549
Spain	20,440
Europe	160,000
World	about 180,000

PRODUCTION OF ALUMINIUM IN EUROPE IN 1934, IN 1000 TONS

Germany	37.2
France	16.3
Norway	15.5
United Kingdom	12.5
Italy	12.4
Switzerland	8.1
Compare	
U.S.A.	33.6
Canada	15.5

TRADE IN 1934, IN MILLIONS OF FRANCS

<i>Foods</i>	Imports
Wine	1,890
Cereals	1,210
Oil-seeds	924
Coffee	700
Sugar	477

A GEOGRAPHY OF EUROPE

Raw Materials for Manufactures

Coal and coke	1,963
Wool	1,325
Petroleum	1,157
Cotton	1,071
Chemicals	751
Metals	431
Hides	329
Silk	159

The imports came from Germany, the United Kingdom, Belgium, Switzerland, Spain, and Italy (about 30 per cent. of the value); from French colonies (about 25 per cent.); and from U.S.A., Argentina, and Brazil (about 15 per cent.).

<i>Foods</i>	Exports
Wine	498
Fruits and vegetables	161
<i>Manufactures</i>	
Chemicals	1,650
Iron and steel	1,555
Cottons	813
Motors	612
Silks	570
Glass	274
Soaps and perfumes	248
Jewellery	232
Clothing	157
<i>Raw materials</i>	
Timber	70

The exports went to the European countries mentioned above (about 43 per cent. of the value), to French colonies (about 30 per cent.), and to U.S.A., Argentina, and Brazil (about 7 per cent.).

FRENCH PORTS IN ORDER OF TONNAGE (ENTERED AND CLEARED) IN MILLIONS OF TONS (1934)

Marseilles	27·3
Seine ports	20·5
Cherbourg	12·8
Channel ports	10·4
Dunkirk	5·8
Bordeaux	4·8
Loire ports	3·1
Sète (Cette)	2·5

SECTION VI

THE BASIN OF THE DANUBE

CENTRAL EUROPE

(i) Point in your atlas or on a wall-map to the parts of Europe that have been described in previous sections of this book, and follow the boundaries of these regions.

(ii) Point to the parts of Europe still to be studied. These are described in this section and the succeeding one—Section VI, “The Basin of the Danube,” and Section VII, “The Mediterranean Lands.”

(iii) Point to the three Mediterranean peninsulas, and then to the area between these and regions that have already been considered.

(iv) Follow the course of the river Danube from its source in the Black Forest to its delta in the Black Sea.

(v) Follow the course of the ‘Alpine’ folds eastward from the Alps of Switzerland, round the great horseshoe bend of the Carpathians, and then eastward once more along the Balkan Mountains. Note that the river Danube cuts through this mountain system twice—at each end of the Carpathian ‘horseshoe.’

(vi) Find the following large tributaries of the river Danube: the Inn, Drave, Save, Theiss, Morava, and Pruth. Now point to the limits of the basin of the Danube.

(vii) Finally, from a political map of Europe get a general idea of the position of the countries that will be studied in this section—Austria, Czechoslovakia, Hungary, Yugoslavia, Rumania, and Bulgaria.

[The points in Nos. iv–vii must be quite clearly grasped before the rest of this chapter can be thoroughly understood.]

The term ‘Western Europe’ is a vague expression that has already been used several times in this book. What exactly is ‘western’ in Europe? How far eastward does

A GEOGRAPHY OF EUROPE

Western Europe extend? What decides whether a region shall be included in Western Europe? None of these is an easy question to answer, and there are similar difficulties in delimiting a Southern or an Eastern or a Northern Europe. It follows that there will be an area of very doubtful extent that might be called Central Europe. Text-books that have a Central European section generally include in that area all Germany and Poland, sometimes Holland and Belgium, always Czechoslovakia, Austria, and Hungary, sometimes Switzerland, nearly always Rumania, sometimes Bulgaria, and usually the whole of Yugoslavia, although it has a Mediterranean coast. This book has been planned mainly on natural regions, and the difficulty of defining Central Europe has been avoided; but whatever the plan the very crookedness of the build of this sub-continent will eventually lead to complications. In this section a diversity of regions, between the Great European Plain in Germany and Poland in the north and the Mediterranean peninsulas in the south, has to be considered, and through this complicated central area flows the river Danube, the basin of which river is the starting-point of the section. First the basin will be considered as a whole; later the political units associated with it will be described separately in more detail.

NEW DANUBIAN STATES

The complicated diversity of the Danube basin is reflected in the chequered history of its countries and in their present political problems. Romans, Tartars, Slavs, Turks, and Teutons in their turn have controlled parts of the basin, but no one people has ever ruled the whole of it. The result is a mixture of races, religions, and cultures, never homogeneous and often in direct opposition. In pre-War days the Central Powers—Germany, Austria-Hungary, Bulgaria, and Turkey—controlled a great strip of territory stretching from the North Sea to the Persian

THE BASIN OF THE DANUBE

Gulf, and it was the solidarity and continuity of this line that enabled them to hold out for so long against the superior man-power and wealth of the Allies during the War. Conversely, the separation and even isolation of the Allied countries—Britain, France, Italy, Russia (until the Bolshevik revolution), Rumania, Serbia, and, later, the United States—made joint action for victory well-nigh impossible. The scattered campaigns of the War were all attempts to break the continuity of the line of the Central Powers. Flanders and Mesopotamia were the ends of the line; the Dardanelles, Salonika, and the Trentino were weak links in its centre. The break-through that marked the beginning of the end was Allenby's success in Palestine and the consequent defeat of Turkey.

The political reshuffle in Central Europe is still incomplete. Czechoslovakia, Yugoslavia, and Rumania have formed, for mutual protection, a 'Little Entente.' Austria is in the impossible position of a buffer state without the necessary neutrality; while a shrunken and dissatisfied Hungary regards her immediate neighbours as spiteful or actually hostile. Such is the state of affairs in the very centre of Central Europe. There is little doubt that the area is a danger-zone where some trivial local incident might precipitate another and a worse European disaster. It is for this reason that one ought to try to understand as fully as possible what are the points of view of the different Central European states, and a knowledge of their geography—*i.e.*, a study of their surroundings—is at any rate one essential towards such understanding.

NOTEBOOK WORK: 55

Refer to the historical table at pp. 375-377, and copy out those parts that concern Danubian lands.

DANUBE BASIN: STRUCTURE

The Swiss Alpine folds, the nature and origin of which have been discussed, are continued eastward in a system

A GEOGRAPHY OF EUROPE

of mountain-chains to which the general term 'Alpine' is applied because of similarity in age and in structure. In the area approximately westward of the St Gotthard 'knot' the folding has been most intense; eastward it seems as if the pressure that produced the folds has been less violent, for the series of folds spreads out fan-wise (Fig. 22), the crumpling and displacement of the sedimentary rocks is less severe, and the core of crystalline rocks is exposed only in a few regions. The northern rib of this fan of mountain-chains is continued eastward as the Carpathians, which curve in a great arc before resuming the eastward trend as the Balkan Mountains. As far as this particular section is concerned, that is the end of the fold, but actually it reappears farther east in the Crimea, more magnificently in the Caucasus, and so eastward to culminate in the mighty Pamirs, whence reradiate eastward another system of Alpine folds, bounded southward by the Himalayas.

From the Swiss Alps the southern rib of the fan bends sharply southward as the Dinaric Alps, a series of parallel folds stretching southward as the Pindus Mountains into Greece and protruding into the Mediterranean Sea as the 'fingers' of Morea, reappearing in Crete with the eastward direction reasserted, and so onward in the Taurus Mountains of the south of Asia Minor to the Armenian mountain-knot and thence by the Zagros and Sulaiman Mountains, eventually to link with the northern rib in the Pamirs. The whole comprises one colossal system of folds, in a definite east-west line, almost from side to side of the greatest land-mass in the world.

The Alpine folds of Europe were prevented from further northward and westward extension by a series of buffers in the form of old mountain-blocks—the Central Massif, the Vosges and the Black Forest, and the Bohemian Diamond—all of which limit the folded mountains of France, Switzerland, and Austria. The blocks that have shaped the Carpathian 'horseshoe' are not so easy to see

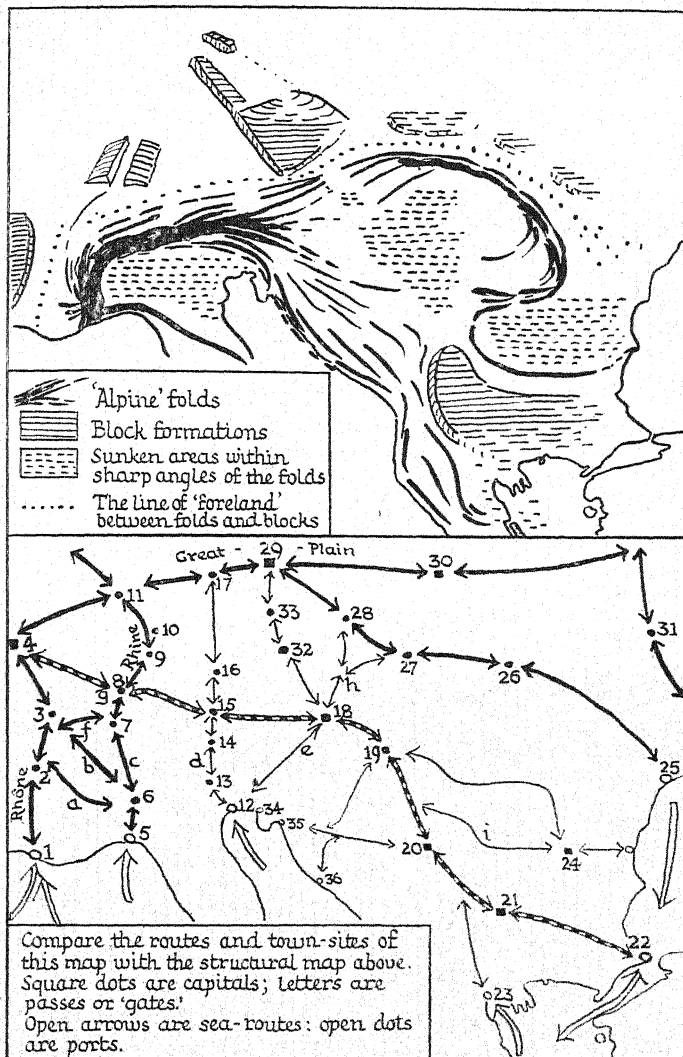


FIG. 22. CENTRAL EUROPE: STRUCTURE AND ROUTES

Can you name the towns on the second map?

A GEOGRAPHY OF EUROPE

on a physical map; they are the Polish plateau (referred to at p. 98) and, farther east and south, outliers of the platform which is the foundation of Russia. A downfold between the old blocks and the young folds is marked by the Rhône Corridor, the Swiss plain, the South German 'foreland,' Moravia, and parts of the valleys of the upper Vistula, the upper Dniester, and the upper Pruth (Fig. 22).

The Dinaric Alps lie between two sunken areas represented now by a part of the Adriatic Sea and the Hungarian Plain, the foundering being probably the result of relief of pressure in the lee of the push that produced the folds. Whether the Dinaric Alps are the result of compression between two sinking blocks or whether they represent a great backwash from the buffers of the northern blocks is still a matter of dispute; in any case, they have characteristics that distinguish them from true Alpine folds.

The Balkan Mountains are folded against the Rhodope block to their south; how and why the pressure should have come from the north in this case is not definitely known.

In this account stress has been laid on the mountains, but of course the lowlands are more important from the point of view of settlement. The following Danubian lowlands occur within great bends of the folded mountains: (*a*) the Rumanian plain, (*b*) the Hungarian plain, and (*c*) the upper Hungarian plain.

NOTEBOOK WORK: 56

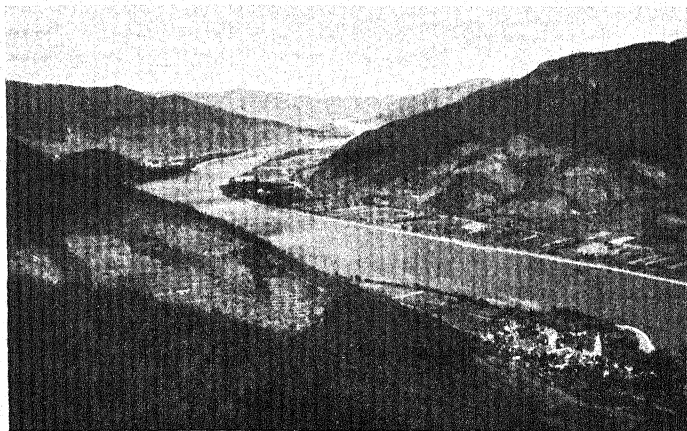
Copy the first map of Fig. 22, which shows the structure of the Danube basin, and add to it the courses of the main rivers—the Danube and its tributaries, and parts of the Rhône, Rhine, Elbe, Oder, Vistula, and Dniester.

THE COURSE OF THE DANUBE

Some of the river-courses marked in the preceding exercise are easy to explain, the rivers Inn, Drave, Save,

THE BASIN OF THE DANUBE

and Morava in particular occupying for great parts of their courses definite downfolds. The course of the river Danube is much more complicated. It rises in the Black Forest, and flows at first in a direction parallel to the Alpine folds but at a considerable distance from them, and not, as one would expect, in the low land immediately



THE DANUBE GORGE BELOW LINZ AND ABOVE VIENNA

By courtesy of the Austrian Federal Railways

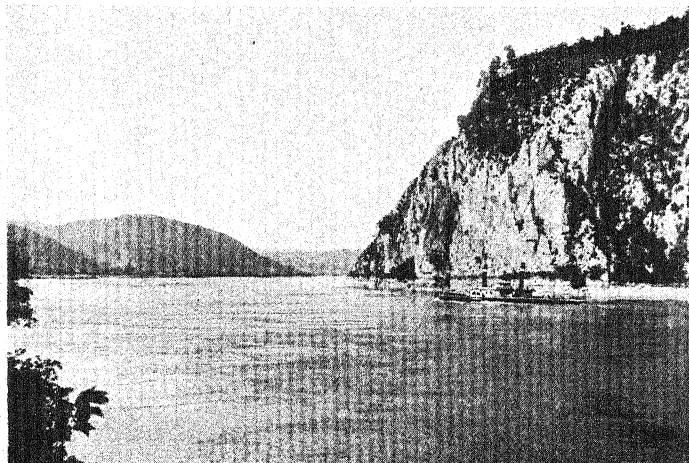
to their north. It is thought that the river occupied this low land at one time, but that Alpine glaciers, moraines, and torrential tributaries with heavy loads have gradually pushed the main stream farther north until now it flows on the dip-slope of the Swabian Juras (pp. 173, 174).

The steep edge of the Bohemian Forest checks the north-eastern direction of the Danube, forcing it towards the south-east and into the Vienna basin, which is a faulted low land between the Alps and the Bohemian block.

Next the river cuts through the Alpine folds, first

A GEOGRAPHY OF EUROPE

through outlying ribs of mountains at Budapest, and later through the Transylvanian Alps at the Iron Gates. It is quite certain that these breaks are not just fortuitous gaps in the mountain-chains, and it is equally certain from the shapes of the cuttings that they have been made by the river itself. The question arises, how is it possible



THE DANUBE GORGE NEAR THE IRON GATE

By courtesy of the Rumanian Legation

for a river to cut a way through mountains far higher than its own bed? There are two explanations. Either the river-bed was once as high as the mountains—which implies that its source was once very much higher than it is now, and that, as the source became lower for some reason, so the river kept pace with the lowering by cutting downward in its own bed. Or it may be that the river was there before the mountains were born, and that they rose slowly enough for the river to wear a way through them to maintain its course. Both processes can be seen working when certain navvying tasks are in progress. For

THE BASIN OF THE DANUBE.

instance, when a ditch for a drain is being dug pedestrians will often maintain a right of way across the line of upthrown earth and keep their path at pavement level, although little mountains rise on either side of their gap. Or, again, the traffic of the barrows of navvies removing earth from the top of a mound to some distance beyond the bottom will wear a gap in the lower slopes; if the work continues the hill-top may be reduced to ground-level, while an outer rim remains comparatively high, but yet with the track of barrows carved through it. The Iron Gates are probably the work of the river Save. Before the Alpine folds occurred the Hungarian plain was a sea, which the rise of surrounding mountains converted into a lake. This lake probably overflowed at the point in the rising folds where the Iron Gates are now.

Below Vienna the river Danube maintains for a time the general eastern direction, but soon takes a sharp turn southward as far as the junction with the Drave. The former of these courses may be regarded as flowing into what was once a great Hungarian lake. The gradual evaporation of its water left a bed tilted to the south, and across this the Danube now meanders in sluggish channels. The powerful Drave and Save push the river eastward again, a course which continues below the Iron Gates until the Dobruja Plateau turns it north into the sunken block of the Black Sea, which the river enters by a very symmetrical delta with one main channel—which is fortunate for navigational purposes.

THE DANUBE BASIN: POLITICAL

NOTEBOOK WORK: 57

Repeat the map of Exercise 56, without names of physical features, and divide the Danube basin into physical regions, marking their boundaries clearly.

To this map add, from an atlas, the political frontiers of the Danubian countries, and after reading the following section explain what the map illustrates.

A GEOGRAPHY OF EUROPE

After the last war the statesmen of the victorious Allies had the task of redrafting the political frontiers of Central Europe. The aim was to produce a new and happier Europe wherein there should be no cause for another tragedy like the Great War. To achieve this object peoples who had been subject to 'alien' rule—*i.e.*, rule by people not of their own nationality—were either to be freed and then formed into independent states or to be returned to their own nation. The establishment of these new countries automatically broke up the solidarity of the old empire of Austria-Hungary, but at the outset of the treaty negotiations it was definitely agreed by all the Allies that there should be no spiteful revenge by the victors on the vanquished, and that the grand opportunity should be seized for the elimination of national grievances. Accordingly the Slav peoples were freed from Teuton rule, and three new Slav states—Poland, Czechoslovakia, and Yugoslavia—were established, the first two consisting of Northern Slavs, and the last of Southern Slavs.

The position of Poland has already been described. Czechoslovakia is the land of the Czechs, who inhabit Bohemia, Moravia, and Silesia, and of the kindred Slovaks, who are mountain people of the northern Carpathians. Yugoslavia is a much enlarged Serbia, a pre-War country of Slavs living around the valleys of the Morava and Vardar. To-day the country includes Serbs, Croats, Slovenes, and Montenegrins, who are all kindred Southern Slavs but, it will be shown later, far from being a united people.

Rumanians are not Slavs, but it is doubtful to what extent their pride at being 'Roman' is justifiable. The large increase in Rumanian territory since the War can be explained only partly on racial grounds. Some of the acquired land has been seized as a visible reward of being on the side of the victorious Allies and as compensation for damage to Rumanian oilfields during the War. Bukovina was taken from Austria, Transylvania and

THE BASIN OF THE DANUBE

part of Banat from Hungary, and Bessarabia from Russia.

The new boundaries of Czechoslovakia, Yugoslavia, and Rumania have resulted in the reduction of the vast Austria-Hungary of pre-War days to two small states. Austria is now almost wholly an Alpine country with one small plain on which stands Vienna, an overwhelmingly top-heavy capital for such a small, poor land. Hungary is now the land of the Magyars of the middle Danube plain. Italy also acquired territory from Austria-Hungary, in the Alpine lands of South Austria and at Trieste and Fiume, the political problems of which will be explained later.

Such was the reshuffle of boundaries after the War, but the granting of racial freedom did not end the statesmen's difficulties. Two other problems loomed large—the question of minorities and complications about religions. In Bohemia there are many Germans, in Slovakia Magyars and Ruthenians (the latter akin to the Russians); in Rumania there are Magyars, Germans, Turks, Bulgars, and Jews; in Yugoslavia the Croats and Slovenes, although Slavs, are minorities unwillingly under Serb rule, and in the Trentino there are many Austrians. It will never be possible to delimit boundaries that will solve this minority problem, but there is no doubt that readjustment at many points would go far towards a peaceful solution. Whether such readjustment will be granted willingly by the states concerned is a different proposition.

Central Europe marks the meeting-place of three branches of the Christian Church—the Roman Catholicism of the centre, the Protestantism of Germany and Northern Bohemia, and the Greek Church of the Balkan peninsula—the official atheism of Russia, and Mohammedanism in the considerable Moslem settlements of the Balkans.

In this setting of racial and religious antagonism statesmen had the task of devising a new Europe freed from the

A GEOGRAPHY OF EUROPE

menace of strife. It is easy to find fault with their solution of the problem and to detect places where readjustment is necessary; but it is not easy to see how such alterations are to be made and who is to make them, while it is almost impossible to suggest a settlement so that unanimous agreement shall be assured.

THE DANUBE BASIN: ROUTES

West of the St Gotthard knot the Alps are violently compressed and twisted; eastward the strands open out as the Carpathians and Dinarics; farther east again they curl inward once more, so that Central Europe is girt by mountains (Fig. 22).

In studying the routes of a mountain-girt area like this one has to think not only of gaps and passes, but whether such openings lead to anywhere in particular. It is often easier to go round an obstacle than to take shorter but more difficult routes through it. Now the mountain obstacle of Central Europe lies generally east and west, and there are four easy ways round it, as follows (Fig. 22, ii): (*a*) along its northern edge, *via* the Great Plain through Poland and Germany—an east-west route; (*b*) along its southern edge, *via* the Mediterranean Sea—an east-west route; (*c*) along its eastern edge, *via* the Russian plain—a north-south route; and (*d*) along its western edge, either (i) *via* the Atlantic or (ii) *via* the Rhône Corridor and the Seine or Rhine valley—north-south routes. So it can be seen that unless there is some special attraction there is no need to go through the central area at all.

Great routes are not only of to-day. It is true that some of them are very recent developments and that many have become important only through modern improvements; but the vast majority have had their origins in the past. There was much traffic over the Isthmuses of Suez and Panama before ever the canals were built; the

THE BASIN OF THE DANUBE

Rhône Corridor was a most important highway long before P.L.M. expresses rushed along it; tribes of nomad horsemen crossed the Siberian steppes hundreds of years before the Trans-Siberian Railway was thought of.

Of the four main routes round the Central European 'walls,' only one was specially attractive to early peoples. The primitive European Plain was forested and marshy, and did not encourage early movement. Any route from south to north led to a harsher climate and to a forest rampart. Only the Mediterranean Sea, with its lack of tides, its cloudless sky, and its narrowness, lured early adventurers over its waters. Tyre and Sidon, Greece, Carthage, Rome, Venice, and Genoa all in their turn sought their wealth across the Mediterranean. But the sea was not every one's element, and certainly did not attract the horsemen who had come from the East across hundreds of miles of the open steppe of Central Asia and Southern Russia. Nor did the forest attract them, but it became a refuge for those who fled before the invading horsemen. The steppes of Russia gave on to the steppes of Rumania, which, however, narrowed westward and ended abruptly at the Carpathian wall. Beyond this barrier pioneers soon discovered other steppe-lands on the Hungarian plain, and soon the eastern horsemen poured over the low Carpathian passes into the new-found prairie-land they understood so well. Beyond Hungary the steppes ended, and although later eastern nomads advanced west and south from the Hungarian basin, it is significant that their exploits were more in the nature of raids, and that where the steppes ended their conquests ended too.

For many centuries immigration into Central Europe came from the east, and movement in the opposite direction was generally in the nature of campaigns by western peoples to check the further advance of the eastern strangers. Successful invasion by westerners eastward did not really occur until the years just before the last war,

A GEOGRAPHY OF EUROPE

when the German ambition of a Berlin-to-Bagdad bloc was more or less achieved. However, the Danubian highway has tended to have mainly one-way traffic only; and, furthermore, the route has been somewhat of a *cul-de-sac*, terminating about Vienna—*i.e.*, at the western end of the encircling mountain wall.

Until Northern Europe became peopled there was no reason for the development of south-north routes linking the old civilizations of the Mediterranean lands with the different culture of the sterner north. As the new northern countries gradually became organized communities they sought to exchange some of their produce for luxuries from the south, a very large part of the original trade between these two contrasted parts of Europe consisting of the exchange of costly furs, fine linens and woollens, amber, and slaves for spices, wines, and silks. But the mountains of Central Europe deflected this trade to their eastern and western ends. The Rhône valley route, passing west of the mountain barrier, grew in importance early, because it led directly to those parts of North-western Europe that developed more quickly. At the far eastern end of the mountain barrier the old Viking route between the Baltic and the Black Sea became a busy way. Between these two highways stretched the Alpine wall, a single barrier in the west, but double or treble farther east.

Soon the Rhine route became important, linking at first with the Rhône route *via* the Burgundy Gate, but soon making its own way directly to Genoa *via* the St Gotthard Pass and Milan.

Another north-south highway led from Hamburg and other Hansa cities due south *via* Hanover, Nuremberg, Munich, and Innsbruck to Venice *via* the Brenner Pass. As a route this is not nearly so obvious on a physical map as, for example, the Rhine or Rhône valley. Nevertheless, it has always been important, and around it and the Rhine route combined were built the Holy Roman Empires of about A.D. 1100 and of 1360 (p. 176).

THE BASIN OF THE DANUBE

Eastward of Hamburg Northern Europe developed comparatively slowly, and eastward of Venice no arm of the Mediterranean Sea penetrates far north into Europe. The eastern plain of Germany was the meeting-place of Slav and Teuton races. In the south the Balkans became an early battleground for Romans, Slavs, and Turks. In consequence there is no great north-south commercial highway between these areas to correspond to the Rhine-Rhône routes or the Viking route. Gaps and passes give opportunities for through routes (for example, *via* the Moravian Gate in the north and the Maritza, Vardar, and Morava valleys in the south); but no combination of these has ever resulted in the establishment of one main thoroughfare. Instead, the Moravian Gate route bends westward after Vienna and seeks Venice *via* the Semmering Pass; and the Morava valley route after Vienna bends westward, not northward, and seeks the Rhine route and Paris.

To-day the Danube valley is traversed by the Orient Express route from Paris to Istanbul *via* the Saverne Gate and Strasbourg, Stuttgart and the Neckar valley, Ulm, Augsburg, Munich, Vienna, Budapest, Belgrade, Sofia, Philippopolis, and Adrianople (Fig. 22).

NOTEBOOK WORK: 58

Repeat the structural map of Exercise 56, and add to it the routes described in the foregoing section (see Fig. 22).

THE DANUBE AS A HIGHWAY

The Danube is navigable for almost all the 1800 miles of its length, certain short stretches where navigation was once difficult—for example, at the Iron Gates and in the delta—having now been improved, so that to-day small barges can ascend to Ulm. But navigability is one matter, and the encouragement of navigation is another. Disadvantages, partly physical but mainly political, detract

A GEOGRAPHY OF EUROPE

from the value of the great river as a busy water-route. It is frozen in winter for about ten weeks, and the thaw in the upper reaches, occurring earlier than in the lower, more continental portions, causes floods, the duration of which is extended both by spring rains and by the summer melting of snow on the mountains whence come the tributaries. The two gorges check the escape of flood-water, with the result that the plains above them are liable to inundation and the river shifts its course in marshy surroundings. Although engineers have mastered most of these physical disadvantages, much more remains to be done if the volume of traffic should merit further expenditure.

This traffic, however, is reduced by two other sets of circumstances. From source to mouth the Danube flows through farm-lands producing wheat, maize, meat, hides, etc.—all bulky goods that might well travel by slow water-transport. Unfortunately the river taps no highly industrialized area that might exchange its manufactures for farm-produce. Either the industrial districts are small and localized—at Munich, Vienna, and Budapest, for example—or else the larger, busier manufacturing regions—those in Bohemia, for instance—are better served by other river or canal systems. In addition, present political situations are a severe check on inter-state trade between Danubian countries. Czechoslovakia, Rumania, and Yugoslavia are combined into a Little Entente, designed primarily to check any expansion or return to power of the country of Hungary in their midst. Rumania and Hungary both have surplus farm-produce to sell. The nearest industrial areas that are possible markets are in Bohemia, Saxony, and Silesia; but in both Germany and Czechoslovakia agriculture is of sufficient importance to have the active support of the Governments, whose policy in both countries has tended towards national self-sufficiency. So Rumania does not sell to Czechoslovakia all the wheat, etc., that she might, and Hungary, the

THE BASIN OF THE DANUBE

nearest agricultural country to Bohemia, is outside the Entente. Rumanian wheat also tends to go downstream to the Black Sea, and so competes in markets beyond the Danubian basin. The obvious purchasers of the machinery, chemicals, textiles, etc., made in Bohemia are the agricultural countries of the middle and lower Danube, but they cannot buy unless they sell their wheat. The net result of the whole situation is a disastrous restriction of trade and consequent poverty along the whole Danubian highway.

NOTEBOOK WORK: 59

(i) Tabulate for the rivers Danube, Rhine, Elbe, and Volga notes about (a) climate, with regard to traffic on the rivers (freezing, floods, etc.); (b) different economic regions traversed; (c) different political regions traversed; and (d) nature of traffic.

(ii) Draw a map showing the boundaries of the following countries: Switzerland, Austria, Czechoslovakia, Hungary, Yugoslavia, and Rumania. Shade distinctively (a) the countries forming the Little Entente and (b) the countries without a sea-coast. Show by arrows what you think are the natural exits for the produce of each country.

THE DANUBE BASIN: CLIMATE AND VEGETATION

The Danube basin is central in Europe and has therefore a continental climate, but modified by the peninsular build of the Continent. Throughout the basin winters are severe and summers are hot, the greatest temperature ranges occurring where oceanic influences are most excluded. Rainfall is light because of the mountain-girt structure, but the mountains themselves have much snow in winter and rain in summer. Towards the west of the basin rain is evenly distributed throughout the year; eastward the summer maximum becomes more marked; southward the characteristic summer drought of the true 'Mediterranean' climate begins to be apparent in varying degrees according to site.

A GEOGRAPHY OF EUROPE

NOTEBOOK WORK: 60

Graph the following climate figures and write notes:

		JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
Munich	{ Temp.	28	31	37	45	52	59	64	62	55	45	35	27
	{ Rain.	1.5	1.3	2.2	2.5	3.9	4.9	4.9	4.7	3.0	2.5	2.1	2.0
Vienna	{ Temp.	29	33	40	50	59	65	68	67	60	50	39	32
	{ Rain.	1.5	1.3	1.8	2.0	2.8	2.7	3.1	2.7	2.0	1.9	1.8	1.8
Belgrade	{ Temp.	29	34	43	52	62	67	72	71	63	55	43	34
	{ Rain.	1.2	1.3	1.6	2.3	2.8	3.2	2.7	1.9	1.7	2.2	1.7	1.7
Bucharest	{ Temp.	26	31	41	52	62	69	73	72	64	53	40	31
	{ Rain.	1.3	1.1	1.6	1.7	2.5	3.5	2.7	2.0	1.6	1.7	1.9	1.6
Sofia	{ Temp.	27	29	39	50	58	65	69	67	60	52	40	31
	{ Rain.	1.5	1.4	1.5	2.1	3.4	3.3	2.8	2.2	2.0	2.5	2.0	1.4
Sonn- blick ¹	{ Temp.	9	8	11	15	24	30	34	34	30	23	16	11
	{ Rain.	4.9	4.9	6.3	6.6	6.2	5.5	5.6	5.1	4.6	5.1	4.6	5.3

To the west of the Danube basin is the mild raininess of the oceanic border; to the east are the extremes of a continental interior; to the south is the special climate called Mediterranean; and not far to the north is the pine-forest belt of only short summers. The result in the vegetation of the basin is a forest rim of deciduous, coniferous, or Mediterranean trees (according to the position and height of the surrounding mountains) and an enclosed area of steppe, which is an exceptional extension of conditions more typical of regions much farther from the ocean. Thus the Hungarian plain is a grassland enclosed by forested highlands.

THE COUNTRIES OF THE DANUBE BASIN

AUSTRIA

Austria has been described as "a tadpole country"—all head and tail with no body; the tail is the mountainous region that includes the Tyrol, the head is Vienna. This

¹ This peak stands 10,000 feet high in the Austrian Tyrol.

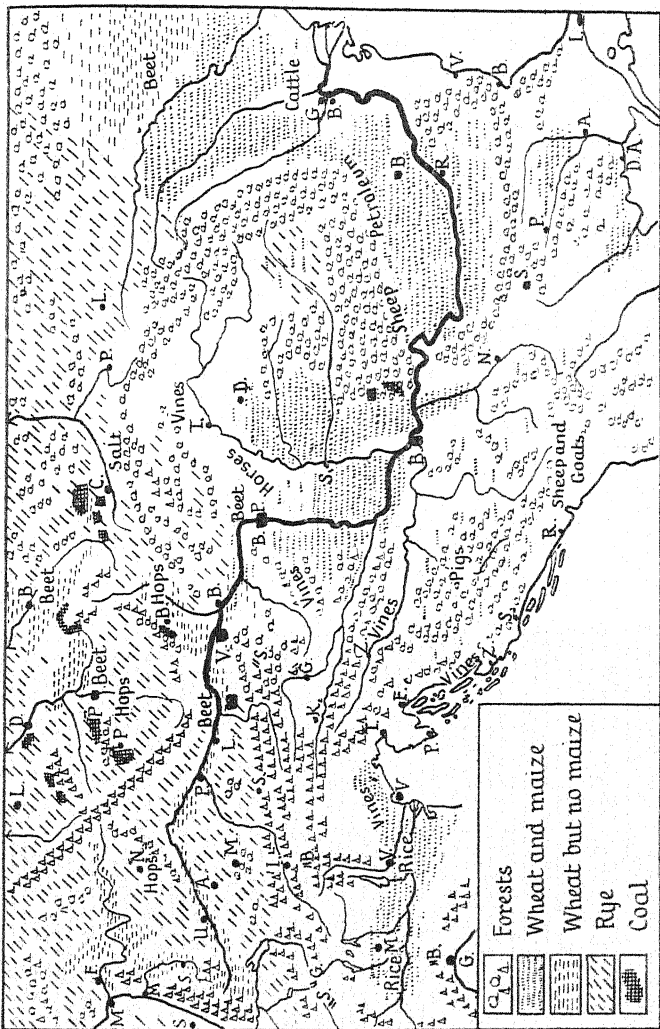


FIG. 23. CENTRAL EUROPE: FORESTS AND FARMS

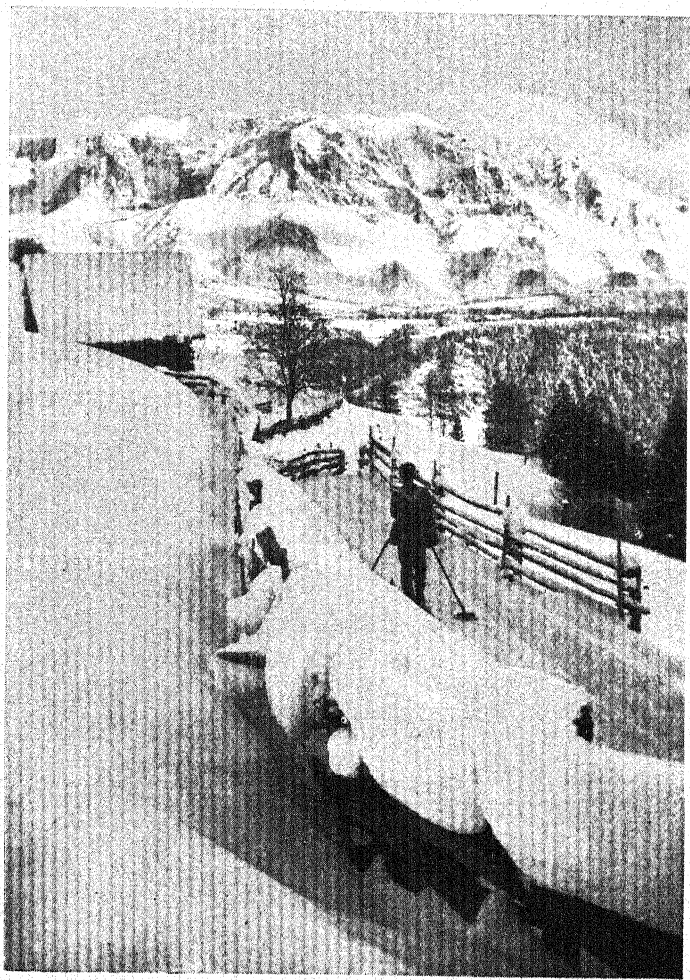
A GEOGRAPHY OF EUROPE

city of nearly 2,000,000 people was the pre-War capital of an empire that contained 25,000,000 people; to-day the new boundaries of Austria include only 6,760,000 of these people, so that 28 per cent. of the population now lives in one huge city. Such a distribution is obviously top-heavy, especially when the mountainous nature of the rest of the country and the present serious restrictions in international trade are considered. The city people of Vienna are factory-workers, merchants, or civil servants. Large-scale manufacture such as is necessary to employ so many people implies the import of much raw material which Austria itself cannot supply either for physical or climatic reasons, and which has to be paid for by exports, especially of manufactures. Austria, an inland country, is at a great disadvantage as regards communications compared with other industrial lands in Western Europe. The result of these considerations, together with others concerning war debts, lack of coal, lack of capital, political instability, etc., is that Austria is bankrupt. The very site of Vienna at a junction of natural routes implies not confinement of interests within the Austrian borders alone, but wide ramifications of trade and influence in all the surrounding lands. It was on the basis of this wider outlook that the city grew to be the Paris of Central Europe, with manufactures of luxury goods in silk, cotton, wool, leather, etc., depending for their markets on peculiar qualities of changing fashion, and of motor-cars (Austro-Daimler and Steyr). The real importance of Vienna, however, is its nodal site, and only a broader outlook of interdependence among the countries of Central Europe can restore to the city its former importance as a commercial and international capital of a sounder comity of nations in the middle Danube basin.

h₇ NOTEBOOK WORK: 61

reg.

- i) Draw a map to show both Austria and Switzerland.
k parts of the rivers Rhône, Rhine, Danube, Inn, and



WINTER IN THE HOHE TAUERN
Photo O.V.W.

A GEOGRAPHY OF EUROPE

Drave. Show four areas of relief and structure combined: (a) the high Alpine chains, (b) the blocks of the Vosges-Black Forest and Bohemia, (c) the foreland between high Alps and upper Danube, and (d) the small Austrian plain around Vienna, the Moravian Gate, part of the Hungarian plain, and part of the Plain of Lombardy on the south of the Alps. Now insert the political boundaries of the region.

(ii) Draw a special map of Vienna as a route centre, marking the following natural highways: (a) down the Danube, (b) up the Danube, (c) the Moravian Gate, and (d) the quickest way to the sea *via* the Semmering Pass to Venice or Trieste. On this map also show political frontiers.

Most of Austria is Alpine—a land of mountains, glaciers, winter-sports, summer resorts, little green valleys, tumbling streams, blue lakes, and sombre forests—in fact, another Switzerland. The southern boundary of the country is more or less along the water-parting between Danubian and Mediterranean drainage, but elsewhere the frontiers are very arbitrary, so that Austria includes Alpine lands, Alpine foreland, and a part only of the Viennese plain. In structure the Tyrolean Alps are complicated folds somewhat similar to the Swiss Alps, but the core of old rocks is revealed only in a few special regions like the Hohe Tauern. This mass of peaks is sometimes referred to as the Hohe Tauern ‘window,’ meaning that at this point an observer can see through the overlying thick-nesses of crumpled limestone into the heart of the mountain-folds.

Climates in the Tyrol are comparable to those in Switzerland. The northern half of the land has colder winters with more snow than the southern slopes towards the Mediterranean Sea. It is on this southern, Mediterranean side of Austria that the Italian boundary has been pushed northward from the southern edge of the mountains overlooking the Venetian plains. It now runs far to the north in a great curve from Lake Como as far east as Fiume, partly to include all Italian-speaking peoples

AUSTRIA

and partly for strategic reasons, so that a possibly hostile neighbour shall not have such ready access to the vulnerable plains of Northern Italy.

The forests, mainly of spruce, which cover one-third of Austria are an important source of wealth, but circumstances combine to reduce the export timber trade. Countries to the north of Austria either have their own supplies of similar woods or can import more readily from the Baltic, while countries to the south restrict their Austrian imports for either political or financial reasons. In consequence the main Austrian exports are not native raw materials but manufactured goods of superior finish that can stand the high costs of railway freightage. For instance, Vienna imports woollen yarn from Leeds, manufactures it into woollen garments like jerseys with clever, distinctive colouring, and exports many of these back to England, where doubtless some are actually sold in Leeds. Occupations in the Alpine regions of Austria are similar to those in Switzerland—dairying on the Alps in summer and in the valleys in winter, lumbering, wood-carving, and the tourist industry, none of which, however, is as highly developed as in the latter country. Iron ore found in the east of the mountain region goes either north to the coalfield and iron-works at Steyr, south of Innsbruck, or south to blast furnaces at Graz. These works, however, are important only as far as Austria is concerned, and are insignificant and uneconomic compared with a great iron and steel region like the Ruhr.

All Austrians are German-speaking and German in outlook, but internally there are disruptions, political and religious, between the countryfolk and the city-dwellers of Vienna. Austria now forms a buffer republic between the two Fascist states of Germany and Italy, the two dictatorships of Yugoslavia and Hungary, and the democratic Governments of Czechoslovakia and Switzerland. Austria is now also a Fascist state, a sudden complication in this political whirl.

A GEOGRAPHY OF EUROPE

NOTEBOOK WORK: 62

Turn the following note into map-form:

Two main routes cross the Austrian Alps, the first *via* the Brenner Pass from Munich to Verona and Venice, the second *via* the Semmering Pass from Vienna to Trieste or Fiume. Town-sites among the mountains are fixed by these routes. Innsbruck (the bridge-town on the Inn) is at the northern entrance (*i.e.*, the Austrian entrance) to the Brenner Pass; Graz, in Styria, controls a valley between Fiume and the Semmering Pass: Klagenfurt, in Carinthia, is midway between the Trieste and Fiume routes, on the river Drave, along whose valley the connecting railway runs; Salzburg (the salt town) is between either Munich or Innsbruck and the Linz Gorge leading to Vienna. All these towns are only small compared with the capital, and, in their past importance, wealth, architecture, and culture, are comparable to the towns of Southern Germany, the independent development of which has already been described.

HUNGARY

The horseshoe of the Carpathians and Transylvanian Alps encloses the Hungarian plain, but the new frontiers of Hungary nowhere reach the ridges of the surrounding mountains. The boundaries of Czechoslovakia, Rumania, and Yugoslavia all bulge into the plain, partly for ethnographic (racial) reasons, but mainly so that the strategic advantages of the railway system shall not lie with Hungary. The main rivers of the plain are the Danube and its tributaries Save and Drave, on the right bank, and Theiss, on the left, but not one of the confluences of tributaries and main stream lies in Hungary, and long stretches of both the Danube and the Drave form parts of the boundary. Hungary is thus compact and unified, but is certainly not the whole of an obvious physical and racial region.

The Hungarian plain consists of two parts, separated by the ridge of the Bakony Forest, at the southern foot of which lies Lake Balaton (or Platten See), a very shallow mere fed by brackish springs. Both the plains are fertile

HUNGARY

steppe, but the smaller north-western portion is rainier and has more trees and more variety of crops than the south-east. Winters are everywhere severe, and thin, powdery snow lies for many weeks; summers are very hot and dry, the rain falling mainly in the early part of the season. The plain is a replica in miniature of the



A FIELD OF TOBACCO-PLANTS

The production of tobacco means much patient labour. Seedlings, raised in nurseries, are transplanted by hand into specially prepared fields; constant weeding is necessary until the plants are well established; careful 'topping' prevents flowering and forces leaf-growth only; mature leaves are hand-picked; and the curing of them, in the sun or in ovens, needs skilful supervision.

By courtesy of the Hungarian Legation

North American prairies, in many parts given over to the ranching stage of development typical of, for example, Alberta, and in other parts to the more advanced large-scale production of wheat and maize (Fig. 23). But at this point the similarity ends. There is no Chicago in Hungary to represent the organized use of the produce of the ranches, and there is no Detroit to represent the

A GEOGRAPHY OF EUROPE

mechanized farming of new lands, and there is no Winnipeg, St Louis, or Minneapolis, and no Duluth or Fort William. Hungary is really suitable for these modern developments; but its people, its past history as a European battle-ground, and the Atlantic or world outlook of industrialized Western Europe, which might have been



TYPICAL PUSZTA COUNTRY ON THE HUNGARIAN PLAIN

By courtesy of the Hungarian Legation

a market for Hungarian produce, all have militated against progress. Hungary has only one large town, Budapest, whose industries like the manufactures of flour, tobacco, sugar, leather, and woollens reflect only to a small extent what large-scale development on the steppes might produce. Instead of the progressive farmers of Canada or the United States, Hungary has a population of peasant farmers many of whom are still in the stage of petty production almost wholly for their own individual needs. In contrast to the rail, river, and canal system of the C.P.R. and the St Lawrence waterways, with great elevators at exchange- and terminal-points, transport through

276

HUNGARY

the Hungarian plain has no cause to cater for a vast traffic in grain or meat. In contrast to the great mills of Minneapolis, many Danubian mills are still rickety affairs built on two boats, the outer one containing a water-wheel which turns the millstones on the inner boat moored to the bank. (And yet at the end of the nineteenth century



ANOTHER VIEW SHOWING THE FLATNESS OF THE HUNGARIAN PLAIN

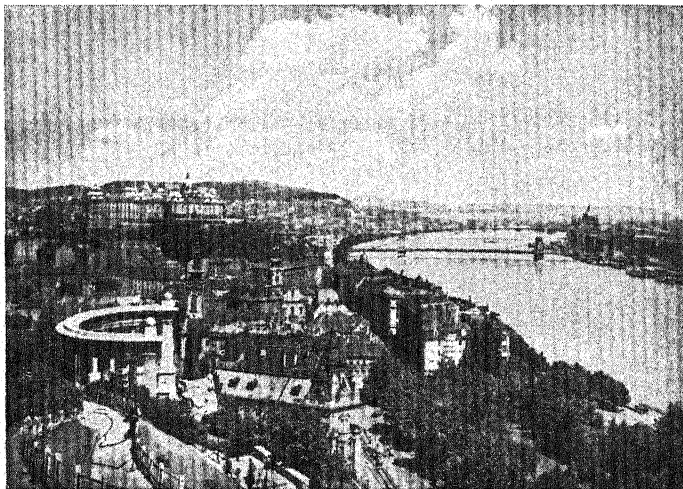
Cf. the illustration at p. 276. The crop here is melons.

By courtesy of the Hungarian Legation

American millers came to Hungary to learn how the people made their excellent flour.) Budapest, however, has modern mills, but the industry is on the decline. In contrast to the prosperous separate farmsteads of North America, Hungarian farmers still congregate in villages, the result of the need for protection and combined action against those raiders who throughout history have used the Danubian route. To-day much time and energy is wasted by the farmers in journeys to and from their distant fields.

A GEOGRAPHY OF EUROPE

Wheat is the chief crop of the plain, followed closely by maize, used partly as human food and partly as fodder, and potatoes, the two cereals being characteristic of the richer steppes and the potatoes of the rainier north-west. Cattle are reared on lowlands nearest to the rivers, and sheep in drier areas. Large ranches (called *puszta*) of



BUDAPEST, THE CAPITAL AND ONLY LARGE TOWN OF HUNGARY

By courtesy of the Hungarian Legation

50,000 acres with 50,000 head of cattle still occur, but the tendency is towards smaller units. These are lands of real cowboys with the floppy sheepskin trousers, the decorated belts, the lassos, the broncos, and the swagger associated with films of the Wild West.

To-day Hungary has little surplus of anything for export, and in any case is surrounded by peoples who would hesitate to buy that surplus if they thought their dealings would promote a more prosperous Hungary with the possibility of her future extension. Austria is

CZECHOSLOVAKIA

Hungary's best customer, and from Austria and Germany Hungary buys manufactures in exchange for her eggs, wheat,¹ flour, and meat.

The Magyars, the people of Hungary, are of Asiatic descent and akin to the Finns; but Eastern characteristics have largely disappeared, and now the people are a proud and isolated unit surrounded by different Slavs. Magyars must not be confused with Hungarian gipsies, who are a race apart. They have given the world the themes of some wonderful music, but contributed nothing to the prosperity of Hungary, where they are regarded as lazy but picturesque nuisances. Budapest contains a large number of Jews, whose gradual rise to power perturbs Magyar politics.

The capital of Hungary and the only large town—Budapest—is situated between the two plains, where the Danube leaves its cutting between the Bakony Forest and the Carpathians. Buda, on the 'Roman' side of the river, is an old fortress site; Pest is a modern suburb. Szeged, on the Theiss, and Debrecen, in the north-east, are centres of farming districts, and in the wide streets great fairs take place four times each year. Tokay, below the slopes of the Carpathians in the farthest north-eastern corner of the country, has given its name to a famous wine.

CZECHOSLOVAKIA

Czechoslovakia has no structural unity, for it consists of the Bohemian block, part of the Carpathian folds, and an intervening low land. The state has no real racial unity. It is true that it was founded as a land of Northern Slavs, as distinct from Yugoslavia, which means 'Southern Slavs'; but the very name Czechoslovakia implies two peoples—Czechs and Slovaks, while it omits very important minorities like Germans, Magyars, and Ruthenians,

¹ In 1934 the value of the eggs exported from Hungary was seven-tenths of the value of the wheat exported.

A GEOGRAPHY OF EUROPE

who in various regions are quite definite majorities. Czechoslovakia has no occupational unity, for the people may be farmers of the plains, herdsmen of the mountains, lumberjacks, miners, factory-workers, hotel-keepers, and almost everything except sailors.

NOTEBOOK WORK: 63

Draw three small maps, all on one page, to illustrate the structural differences of Czechoslovakia, Austria, and Hungary.

Czechoslovakia, lacking in structural, racial, occupational, and climatic unity, is nevertheless by far the most settled and the most prosperous of the countries of Central Europe. The reasons for this are only partly geographical. In the first place Czechoslovakia is a new state. Now, newness may in itself be an advantage in that it enables a state to have a fresh start, unhampered by tradition. Against this must be offset the disadvantage of inexperience. The prosperity of all the new states has depended on two main factors—the broad, thoughtful planning by their statesmen, and the encouragement without interference by old-established neighbours. Of the new states Czechoslovakia has produced not only the most outstanding personality in statesmen, but has received also most help in money and advice from other lands, including the United States, and the League of Nations.

From a geographical point of view there is much to be said for diversity of surroundings in a country, provided, of course, that it does not take the extreme form of causing internal disruption. A land with prospects of development in more than one direction will tend to be more stable than a land confined to only one activity. The slump in the prices of farm-produce went a long way towards bankrupting Hungary, which had few other means of livelihood. In the same way the decline in world trade, due to the poverty of agricultural countries, precipitated a crisis in the United Kingdom, which specialized as the world's

CZECHOSLOVAKIA

workshop. Countries that happened to have both industrial and agricultural developments, with no intense specialization in either, certainly suffered in the recent depression, but they were better able to weather the storm by withdrawing from international trade and concentrating for the time on national self-sufficiency. These generalities require considerable modification and are not, as they stand, the whole truth: but as a principle they help to account for the stability and prosperity of Czechoslovakia.

The country has been built out of the most prosperous parts of pre-War Austria-Hungary, together with a small Silesian area taken from Germany. The Bohemian Diamond is by far the most important region in the new country. Bohemia is an old plateau-block with high rims and a central hollow, into which the streams from the mountains make their way. The Moldau from the south, the Eger from the west, and the Elbe from the east all unite and leave Bohemia by the Elbe Gate northwards. This means that the slope of the land implies an outlook towards Germany rather than towards the middle Danube, so that this part of the country should not really come under the heading of Danubian lands. In old lakes of the central hollow of Bohemia coal-measures were laid down, and very recent lakes account for the newer deposits of lignite and peat. Iron ore also occurs close to Pilsen (Plzeň), and the Ore Mountains have in the past yielded silver, lead, and copper. The heavy rainfall on the mountain-rims and the tumbling streams therefrom provide hydro-electric power. Here, then, are all the makings of an industrial area—coal and other power, and iron for making machinery—provided (*a*) that raw materials for large-scale manufacture can be supplied in bulk, and (*b*) that the people have the skill and energy to use the resources of their land.

The story of the development of cottage industries (woollens, linen, lace, gloves, etc.) in Bohemia is the same

A GEOGRAPHY OF EUROPE

as has already been told in connexion with Saxony and Silesia. The presence of coal and iron, the navigable Elbe, and the near supply of German technical knowledge and skill in organization all have contrived in the last fifty years to turn the basin into an industrialized area specializing in mass-production and seeking world



BATA BOOT- AND SHOE-FACTORIES AT ZLIN, IN MORAVIA
It is worth comparing the general plan with that of Magnitogorsk (p. 91).
By courtesy of the Czechoslovak Legation

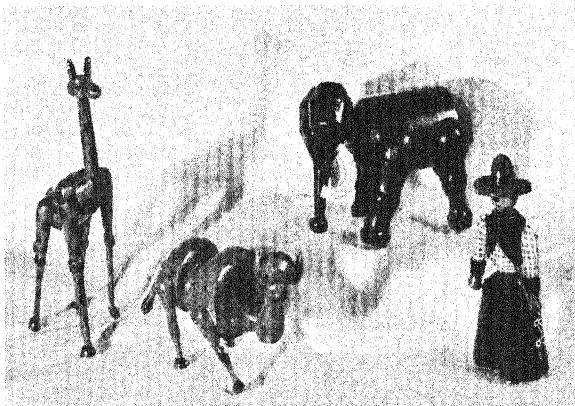
markets for its manufactures. One of the most wonderful examples of mass-production on a colossal scale, comparable in its technique to the methods of the Ford factories, is the Bata boot- and shoe-factory at Zlin.

Bohemian glass has long been famous, and takes the form not only of very beautiful and very expensive glass-ware, but to-day of an infinite variety of cheap articles including beads, Christmas-tree decorations, and glass eyes for dolls and other toys. The 'Dresden' china industry of Meissen, north of the Elbe Gate, is repeated south of the gorge on the plateau. Graphite is found in

CZECHOSLOVAKIA

the south of the Diamond, and the lead-pencils of Budweiss (Budějovice) find a world market.

Besides this wealth from mineral resources the central plateau has very rich farm-lands producing barley for malting (lager-beer), rye and oats (but little wheat), potatoes, sugar-beet, hops, and tobacco. The mountains



TOYS FROM CZECHOSLOVAKIA

They are good examples of designs based originally on toys made by peasants in their homes, but now skilfully adapted to machine production in factories.

By courtesy of the Czechoslovak Legation

yield timber; the forests have herds of pigs which become hams and sausages, and little upland farms send their cheese and butter, wool and hides, to the big markets in the central cities. Karlsbad and Marienbad, at the foot of the Ore Mountains, are world-famous spas, but all the mountain-rims attract crowds of Czechs and Germans for winter-sports or summer tramps.

NOTEBOOK WORK: 64

Draw a map of the hinterland of Hamburg. This exercise seems to be a sudden backward jump into another country

A GEOGRAPHY OF EUROPE

and into a section of this book that was considered as completed; but in the description of North Germany the hinterland of Hamburg was deliberately omitted. Now, having studied Bohemia, the Elbe basin can be considered as a whole, with Hamburg as its 'front door.' By the terms of the Treaty of Versailles Czechoslovakia has the free use of the river Elbe, which is thus internationalized, the free use of certain wharves



A HOP-FIELD IN BOHEMIA

By courtesy of the Czechoslovak Legation

in Hamburg, and the lease of some land near the mouth of the river for building other wharves if necessary.

The eastern or Slovakian (and Ruthenian) portion of Czechoslovakia is in sharp contrast to Bohemia. Slovakia is the land along and around the Northern Carpathians, the Tatra group, and the Forest Carpathians. These mountains are folds like the Alps, but not nearly so high. The winter snowfall is heavy everywhere, but it is all melted by early summer, and so there are no glaciers. Limestones and sandstones are the common rocks, but in the Tatra granite has weathered to form a wild landscape.

CZECHOSLOVAKIA

Slopes are forested with deciduous trees below and conifers above, only the highest peaks reaching above the tree-line.

The density of population in Slovakia is about half that of Bohemia, while Ruthenia, in the extreme east, is still less sparsely peopled. On the steeper northern slopes



A CZECH SPA AT THE FOOT OF THE ERZ GEBIRGE

Note the forested slopes.

By courtesy of the Czechoslovak Legation

of the mountains little agriculture is possible, and the people are lumberjacks; the southern slopes are less sheer but much broken into hill and dale; valley peoples cultivate the vine, tobacco, and sugar-beet, upland peoples are shepherds, and quarries for iron ore employ others.

Between Bohemia and the Carpathians is the low land of Moravia, with deep, rich soil producing rye, wheat, barley, hops, sugar-beet, tobacco, and even wine.

A GEOGRAPHY OF EUROPE

NOTEBOOK WORK: 65

(i) Draw a structural map of Czechoslovakia. Mark the forests and the rich farm-land. Mark coalfields at Pilsen, just south-west of Prague, and a smaller one at Brno (Brünn). Mark the following large towns of which some particulars are given:

Prague (or Praha). The capital—central for Bohemia, but not for Czechoslovakia; wealthiest region; commercial centre; cultural centre of Czechs; manufactures glass, cottons and woollens, gloves, beer, paper, machinery, and motors (Tatra).

Brno (or Brünn). Second largest town—central for Moravia but not for Bohemia, where most people live; manufactures woollens and matches.

Ostrava. Third town; in Silesia; modern coalfield town; German influence; frontier problem.

Bratislava (or Pressburg). Fourth town. Danube port; note boundary here; headquarters of Danube International Navigation Commission, whose task is to unify conflicting interests of Danubian lands and make the river the great highway it ought to be. (Czechoslovakian river traffic in 1933: Elbe and Vltava (river of Prague), 1,271,512 tons; Danube, 515,252 tons).

Pilsen (or Plzeň). Fifth town; modern, industrial; manufactures iron and steel, chemicals, machinery, woollens, glass, and beer.

(ii) Link in tabular form the notes on towns in Exercise (i) to the natural resources, site, etc.

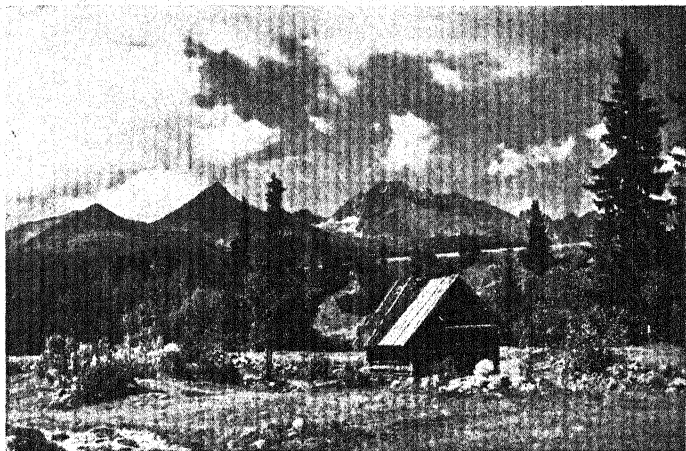
(iii) Draw a structural map of Czechoslovakia to show routes only (river and rail).

RUMANIA

After leaving the Iron Gates the river Danube enters the last of its plain tracts—a great, triangular lowland, with the river pushed over towards the southern edge of the triangle by the deposited loads of the many tributaries from the Transylvanian Alps. The greater part of the lowland, which lies north of the river, is Wallachia, the Limestocleus of Rumania, with Bucharest, the capital of the Tatra country, approximately central in this low land. The northern boundary of pre-War Rumania was along

RUMANIA

the crest of the Transylvanian Alps, so that the country then consisted of a crescent of low land in Wallachia and its natural continuation in Moldavia. The territorial acquisitions of the new Rumania have already been mentioned (p. 260). As a result of this enlargement the country, instead of being definitely one physical unit of



SCENE IN THE HIGH TATRAS

By courtesy of the Czechoslovak Legation

the lower Danube, now comprises two distinct regions, one high and one low.

Consider first the highland region, Transylvania, which is an upland hollow surrounded by high mountains. The Transylvanian Alps and the Moldavian Carpathians present steep edges to south and east respectively, while the Bihar Mountains on the west form a north-south rampart against the Hungarian plain. The river Maros escapes from the central hollow by a long gorge. The mountain climate is very severe in winter, but summers are pleasantly cool compared with the heat of the lowlands.

A GEOGRAPHY OF EUROPE

Within the basin there are deciduous forests and meadowlands, but on the higher rims, with their heavier snowfall, conifers and treeless summits occur. Some few peasants make their permanent homes in this mountainous land, but migration to and from the surrounding plains is a more common mode of existence. Flocks of sheep



A VILLAGE IN TRANSYLVANIA

By courtesy of the Rumanian Legation

especially are driven to the highlands in summer and down to the plains again for winter. The mountains certainly contain mineral deposits that may be rich, but they are not exploited yet; however, coal and iron on the extreme south-western frontier of Rumania (just before the Danube enters the Iron Gates) have given rise to a locally important smelting area, and Rumania is actually the second gold-producing country in Europe outside the U.S.S.R., although the amounts are trivial in world production. Much more important than these minerals is the petroleum associated with the outer foothills of the Carpathians, especially at Ploësti, north of

288

RUMANIA

Bucharest. The oilfields do not as yet compare in production with those of the United States or Russia, but with the help of foreign capital they are now being developed. Pipe-lines take oil from Ploësti to Bucharest, and then either to Giurgevo, the nearest port on the river Danube, or to Constanta, the nearest Black Sea port. Salt-mines, also on the outer Carpathian flanks, are owned by the Government and worked wholly with convict labour.

Wallachia and Moldavia are plains either of alluvium or of loess, with an extreme climate and light spring rains, resulting in steppe-land. Ranching is important, and hides and leather are exported. Cultivated land yields excellent crops of maize, the chief cereal and the food of the people; of wheat and barley, for export mainly; and of tobacco, for home use. Delta land is deserted in many parts or used for grazing, and long strips close to the Danube in other parts of Rumania are too swampy or liable to floods for cultivation. Bessarabia, the province which Rumania has acquired from Russia, adjoins the Ukraine, and many of its people are Little Russians. Its products are characteristic of the 'mixed' farms across the border (p. 71).

The people of the Rumanian plains are peasant proprietors. In consequence farms are generally too small to make the use of modern machinery economical. Although there is a surplus of both wheat and maize for export, the peasant tends to grow varied crops like maize, beans, and pumpkins, to keep poultry and perhaps a few cattle, all primarily for his own use and with little interest in money crops. The break-up of large estates after the War and the allotting of land to the people have not had all the beneficial effects that were anticipated, at any rate as far as participation in world trade in primary commodities is concerned. The agricultural policies in South Russia and neighbouring Rumania form an interesting contrast. In the former peasant-holdings to the extent of over 60 per cent. have been 'collectivized,' because large

A GEOGRAPHY OF EUROPE

farms are considered the most economical in a machine age. In the latter the large estates of the aristocracy have been divided into smallholdings on the principle that a peasant population is contented only when it owns its land. The one method achieves production at the cost of pride of ownership, the other reckons that lessened



PETROL-TANKS AT CONSTANTIA

By courtesy of the Rumanian Legation

production is outweighed by common satisfaction. The rights and wrongs of either side may depend on the human factor, but the geographical factor, which considers the kind of land on which the experiments are made, is bound to be of equal importance.

Routes and Towns

The river Danube is the most obvious route through Rumania, but the river as a highway and as a line for town-sites has certain disadvantages: (a) its mouth is a

YUGOSLAVIA AND BULGARIA

delta, which means it has so many small mouths that none of them may be a useful passage; (b) riverine lands are marshy; (c) the current in the gorge of the Iron Gates seriously affects water-traffic, and cliff-walls prohibit road or rail traffic close to the river. Consequently Rumanian towns are not especially associated with the Danube. Sulina is the port at the entrance to one of the distributaries which has been dredged and canalized to make it navigable for bigger boats; Braili and Galatz are river-ports at the head of the delta, near the confluence of the river Pruth. The Danube Commission sits also at Galatz (see p. 286). The chief port of the country is Constanta, south of the delta and the lagoon coast, and north of the southern cliffs, where the distance between Danube and coast is shortest and the Dobruja plateau lowest. Bucharest, the capital of all Rumania, and Yassy, the former capital of Moldavia, are centrally situated in their respective plains. The former is on the main east-west railway (which, note, uses only a portion of the Iron Gates gorge) and opposite important passes over the Transylvanian Alps. The two largest towns in Rumania after Bucharest are both in the recently annexed Bessarabia—Chishinau (Kishinev), central in the plain, and Cernautzi (Karnasy), near the mouth of the Dniester.

NOTEBOOK WORK : 66

Draw a map of the middle and lower Danube to include the whole Carpathian horseshoe. Show routes and town-sites in and on the borders of this area to the north and north-east. (Routes from the south are explained in the next section.)

YUGOSLAVIA AND BULGARIA

Boundaries

These two remaining Danubian lands form a convenient link between this section and the final Mediterranean section of this book, for Yugoslavia and Bulgaria are both

A GEOGRAPHY OF EUROPE

Danubian and Balkan; they are transition areas between Central and Southern Europe.

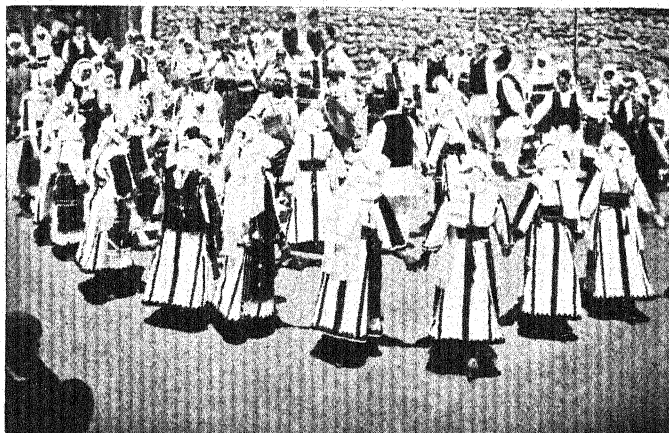
Yugoslavia is a post-War country whose boundaries were originally settled so as to include one racial group, the Southern Slavs, on the principle that there is more chance of stability when distinctive nationalities are self-governing.

The nucleus of Yugoslavia is old Serbia, the country of the Slavs who had settled approximately in a natural physical region around the valleys of the rivers Morava and Vardar. This central core has had attached to it a big area of very diverse regions mainly to the west and north, the country now extending westward to the Adriatic coast (for long a Slav ambition) and northward to the river Drave (Fig. 24). In the main Yugoslavia is a highland country, but the boundaries extend northward beyond the natural region of the mountains to include enough of the Hungarian plain to save Belgrade, the capital of Yugoslavia, from being a frontier town. It is more especially along the northern boundary that certain of the Southern Slavs, although allied racially to the Serbs, are distinctive enough in culture to present strong claims to independence. The Croats and Slovenes particularly resent domination by the Serbs, but resent still more any suggestion that non-Slav neighbours in Italy, Hungary, or Austria should acquire control. Strong separatist movements on the fringes of Yugoslavia tend to make this new state a possible scene of further alterations to the political map of Europe.

The Bulgars are another distinct ethnic group, and a much more united people than the Southern Slavs. Further, there are few Bulgars now outside the frontiers of Bulgaria. The country is therefore a settled community with no racial problems comparable to those of her neighbours. Yet Bulgaria, as an ally of the defeated Central Powers, feels much the same sort of grievances as Austria, Hungary, and Germany. In particular she

YUGOSLAVIA AND BULGARIA

resents her exclusion from the Ægean Sea by the extension of Greek territory, and from the Danube mouth by the extension of Rumanian territory. Bulgaria's only sea-outlet is on a strip of Black Sea coast with few harbours, while all the main Bulgarian rivers—Danube, Struma, and Maritza—have their mouths in foreign territory.



PEASANTS IN YUGOSLAVIA

By courtesy of the Yugoslavia Express Agency

Yugoslavia too has a problem of sea-outlets in that the Vardar mouth and the port of Salonika are Greek, while the long and broken Adriatic coast, although containing several harbours, is not readily accessible from Belgrade because of the parallel ranges of the Dinaric Alps. The better harbours of Trieste and Fiume, in the north, and of Durazzo and Valona, in Albania, are Italian or under Italian influence.

Structure

Yugoslavia and Bulgaria form the widest and least peninsular part of the Balkan Peninsula. Greece, small

A GEOGRAPHY OF EUROPE

Albania, and smaller Turkey in Europe form the southern peninsular portion. The structural core of the whole peninsula is the old Rhodope block, against the northern edge of which the Balkan Mountains are folded in an east-west line, while the western edge limits the north-south foldings of the Dinaric Alps. In Fig. 24, showing this structure, it should be noted that, whereas the rivers



LIMESTONE MOUNTAINS IN THE DINARIC ALPS

Karst-land lies at the summit of such ranges.

By courtesy of Yugoslavia Express Agency

Maritza, lower Danube, Save, and Drave occupy down-folds in the mountain system, the rivers Vardar and Struma have carved deep troughs across the Rhodope block. The western edge of the block is marked by a series of mountain knots like the Shar Dagh. The block itself is broken by frequent rock-precipices, and there are few routes across it.

The Balkan Mountains present a steep face to the Maritza valley and a more gentle slope towards the Danube. Summits are rounded, and there are many fairly easy passes.

YUGOSLAVIA AND BULGARIA

It has already been shown that the Swiss Alps are a breaking or broken earth-wave, while the Juras represent more even ripples. The Dinaric Alps combine these types in regular folding and absence of complicated over-folding. They are Alpine in that they belong to the same



THE DOLOMITES

Note how the limestone mountains have weathered into pillar-formations.

By courtesy of L. A. White

upheaval that caused the Alps, but not Alpine in their scenery, as compared with Switzerland or the Tyrol. Nevertheless, their scenery is on the grand scale, for the limestones of which the mountains are largely formed have weathered into magnificent precipices and columns. The Dolomites of the Italian-Yugoslavian border represent limestone scenery at its grandest.

A GEOGRAPHY OF EUROPE

NOTEBOOK WORK: 67

Draw a map of the northern half of the Balkan Peninsula, and with the help of Fig. 24 and an atlas show the structure of Yugoslavia and Bulgaria. Mark their boundaries, and name the following regions, which will be mentioned in the next sections: Croatia, Dalmatia, Banat, Dobruja, the Karst, and Slavonia.

Climate

Yugoslavia and Bulgaria are transition regions in climate, lying between a continental north-east, a temperate north-west, and a Mediterranean south. The Adriatic coast is Mediterranean in climate, with mild, rainy winters and hot, dry summers. The fuller description of this climatic type is given in Section VII. The high Dinaric folds form a definite climatic boundary, and immediately behind the coastal ranges the climate changes rapidly to a continental type, the equable mildness of the coast giving place to severe extremes. Throughout the rest of Yugoslavia and Bulgaria winters are cold, and very heavy falls of snow occur on all the mountains. This cold season changes rapidly to a hot summer with rain in the form of thunderstorms. The driest area of all is along the Black Sea coast of Bulgaria. The transitional nature of the area as a climatic region can be further seen by noting the types of climate across Bulgaria from north to south—i.e., from the dry, continental steppes of the lower Danube, across the rainier, forested Balkan Mountains, down into the sub-tropical low land of the Maritza valley, over the Rhodope block with forests becoming more Mediterranean in character, and finally down to the Ægean coast, where Mediterranean characteristics are very pronounced. The section would ^{be} to continue still farther south to the Ægean ^{coast} ^{lands} before the true Mediterranean climate would be fairly ^{reached}.

YUGOSLAVIA AND BULGARIA

NOTEBOOK WORK: 68

Draw two sections across the northern half of the Balkan Peninsula, one from east to west (from, for example, Durazzo to Burgas), and the other from north to south (through Philippopolis, for example). Let the sections show the structure of block and fold clearly. Above the sections write notes on the climates of the various regions.

Products

Yugoslavia and Bulgaria are poor lands. They are largely mountainous, with many forests of oak and beech, and only a few riverine lowlands (Fig. 23). In the forests herds of pigs forage for themselves on acorns, beech-nuts, and roots, in much the same way as sheep are put out to graze on the uplands of the British Isles. On rockier, treeless heights sheep and goats manage to find enough humble pasture. In the valleys peasants grow maize for bread, vines on the sides of their cottages, vegetables, and fruits, especially plums. The vast majority of the people exist wholly on the produce of their own farms, living in wood or wattle homes consisting of only one room, which is often shared in winter by the animals.

The people of the Dalmatian coast are more fortunate, for they can grow wheat, maize, vines, olives, figs, and many other fruits in their warm, sunny land; but they lack meat and milk. The long summer drought withers pasture, so that cattle cannot be kept; goats provide milk, and olive oil takes the place of butter. The sea provides a variety of fish.

Some regions and products are worthy of more special note. The northern marches of Yugoslavia between the rivers Drave and Save and extending well on to the Hungarian plain are much better agricultural land than the mountainous parts of the country, and support a more energetic people. Wheat and barley, sugar-beet and potatoes, vines and tobacco, are all grown, and cattle

A GEOGRAPHY OF EUROPE

and pigs are reared. This is one area in which separatist movements are particularly strong, and where minority problems are acute.

The Morava valley is another fertile lowland where farming is more intensive and progressive, with crops of maize, wheat, tobacco, and plums.

The main physical and climatic regions of Bulgaria have already been indicated, and for each of these there are distinctive products. The northern steppes produce wheat and maize; the mountain parts, timber, wool, and goat-hair; while the fertile Maritza low land, the most desirable part of the country, yields wheat, maize, barley, and even rice in riverine swamps, wine, many fruits (but especially plums again), tobacco (used for 'Turkish' cigarettes), silk, and roses for perfume. Most of the North Aegean shore-land belongs to Greece, the products including fruit, tobacco, silk, and cotton.

The lists of products in the preceding paragraphs look rather imposing and might be made more impressive by adding that Yugoslavia has large lignite-fields, and deposits of rich iron ore and other metals in the Dinaric Alps. But for the most part the produce has to be regarded as catering for hundreds of very small local markets like Eastern bazaars. Here are brought not only food and drink, but much beautiful work of cottage craft—carpets and rugs, embroidery, decorated leather-ware, and some metal goods. It may seem a simple, primitive mode of life, but its peace is marred by racial and religious squabbles, and in many areas by endless feuds between rival clans in different valleys. Industries in the few big towns are on a larger scale, but consist mainly of manufactures similar to those of the cottage industries. Northern towns in Yugoslavia, on the extension of the country into the Hungarian plain, have important flour-mills and breweries, and several places like Belgrade, Serajevo, and Zagreb make metal goods from imported, semi-finished material, the products ranging from humble farm tools

YUGOSLAVIA AND BULGARIA

to rifles. Attar of roses is a special Bulgarian product from southern valleys in the neighbourhood of the Shipka Pass across the Balkan Mountains.

Routes and Towns

NOTEBOOK WORK: 69

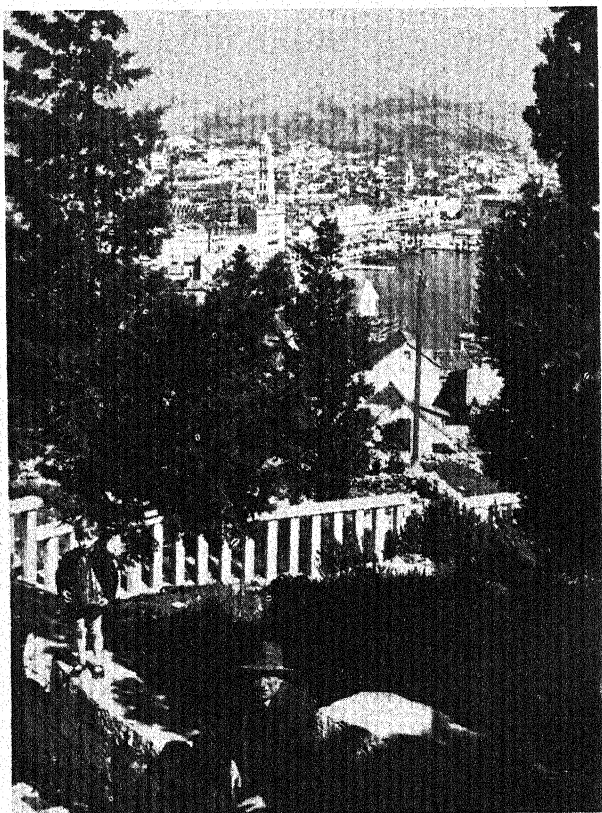
(i) Repeat the structural map of Yugoslavia and Bulgaria and add the political boundaries. The map should show that natural routes are very limited, that they follow the large river-valleys, that they go through both countries without having a terminus in either country, and that a large area towards the Adriatic coast has few routes at all. Mark the following (Fig. 23):

(a) The Orient Express route coming from Vienna and Budapest to Belgrade, and continuing up the Morava valley to Nish, where the route forks, the main line branching eastward to seek the Maritza valley and reaching Istanbul *via* Sofia, Philippopolis, and Adrianople, the other branch taking the Vardar valley and reaching the sea at Salonika. It will be noticed that both these routes terminate at ports outside the frontiers of Yugoslavia and Bulgaria.

(b) Bulgaria's sea-outlets: (1) Sofia to Varna, on the Black Sea, along the north side of the Balkan Mountains, but avoiding the marshy Danubian lowlands; (2) Philippopolis to Burgas, on the Black Sea, along the south side of the Balkan Mountains; (3) Maritza valley to Dede Agach, the nearest Ægean port to Bulgaria, in a territory that became Bulgarian after the second Balkan War of 1913, but was ceded to Greece after the last war.

(c) Yugoslavia's sea-outlets: (1) Belgrade to Trieste or Fiume (both Italian), *via* the Save valley and Zagreb (Trieste and Fiume are also the nearest ports to which Budapest is joined by railway, also *via* Zagreb, which thus becomes an important junction in a fertile agricultural region); (2) Susak, a suburb of Fiume, just within the Yugoslav border, is being developed as a port, but has obvious disadvantages; (3) Belgrade to Spalato (Split), *via* the Save valley and across difficult mountain country (Zara and the island of Lagosta, north and south respectively of Spalato, are both Italian); (4) Belgrade to Ragusa, *via* the Save valley and its tributary, the Bosna, and across difficult mountain country; (5) Belgrade to Albania (which is under Italian influence), *via* the Save valley and its tributary, the Drin; (6) Belgrade to Salonika

A GEOGRAPHY OF EUROPE



SPLIT (SPALATO), YUGOSLAVIA'S ADRIATIC PORT

By courtesy of the Yugoslavia Express Agency

(where Yugoslavia has a free zone), *via* the Morava and Vardar valleys.

(ii) Draw a map and write a note about the site of Belgrade (an old fortress between the Turk and Christian Europe—a river-junction town—a route centre—but, as the capital of Yugoslavia, in a position with many difficulties and dangers).

YUGOSLAVIA AND BULGARIA

(iii) Draw a map and write a note about the site of Sofia (central among the diverse regions of Bulgaria). Compare its site as a capital with that of Ruschuk (once the capital), on the Danube, or Philippopolis (the centre of the most fertile region in Bulgaria, but shut off by mountains from easy access to other regions).

(iv) Tabulate town-sites for the following parts of the continental Balkans: (a) *east*, Dobruja, Balkan Mountains, Maritza valley, Rhodope block; (b) *centre*, Morava, Vardar, and Struma valleys, Shar Dagh knot; (c) *west*, Pindus Mountains, Dinaric Alps; (d) *north*, the Save and Drave valleys. In addition to towns mentioned above, note the following: Uskub, Cetinje (the former capital of Montenegro), Serajevo (where a murder started the last war), Laibach (a railway junction), Marburg (on the river Drave).

A GEOGRAPHY OF EUROPE

SOME STATISTICS (1934) ABOUT THE DANUBIAN COUNTRIES

See also Figs. 26, 27.

—	AUSTRIA	HUNGARY	CZECHO-SLOVAKIA	RUMANIA (1933)	YUGO-SLAVIA	BULGARIA
Exports, in Percentages of Total Value						
Live animals .	0.5	10.7	0	2.9	11.6	3.9
Food and drink .	2.6	45.3	5.5	26.6	34.2	40.3
Raw materials .	27.3	15.9	24.2	68.8	46.4	52.3
Manufactures .	67.6	27.8	70.0	1.7	7.0	3.5
Imports, in Percentages of Total Value						
Live animals .	6.7	0.1	1.1	0	0	0
Food and drink .	21.6	6.4	14.6	6.9	9.2	4.0
Raw materials .	38.5	52.3	53.9	12.6	21.8	34.3
Manufactures .	31.6	40.2	29.7	80.5	66.4	61.7
Percentages of Population in Agriculture and Industry ¹						
Agriculture .	32	58	28	— ²	82	81
Industry, commerce, mines .	33	25	51	— ²	11	12
Numbers of Livestock, in Millions						
Cattle .	2.3	1.7	4.4	4.2	3.9	— ²
Sheep .	— ²	1.0	.5	12.3	8.6	— ²
Pigs .	— ²	2.5	3.4	2.9	2.6	— ²
Production of Wheat, in Millions of Tons						
—	.4	1.7	1.4	2.1	1.8	1.1
Yield of Wheat, in Bushels per Acre (1933)						
—	23	17	26	8	11	16
Production of Maize, in Millions of Tons						
—	.1	2.16	1.50	4.55	3.57	.95

¹ Latest census.

² Data not available.

SECTION VII

THE MEDITERRANEAN LANDS

MEDITERRANEAN CLIMATE

I. IDEAL CLIMATES

BRITISH weather is a constant theme for popular grumbling, and the stock phrase that concludes or summarizes the grievances is generally, "Well, it's impossible to please every one." Is there such a thing as a climate that does please every one? Is there an ideal climate that would actually satisfy farmers, holiday-makers, and washer-women? Or, asking the same question in another form, suppose that grumblers at our weather could arrange the climate to suit their own fancies, what changes would, in general, be to everybody's satisfaction?

From the point of view of luxurious comfort it would certainly be pleasant if the year could be one long summer holiday, an idea which evidently appeals to the fortunate few who are wealthy enough to escape our winter by taking sunshine cruises to places as far away as South Africa. But summer holidays can be miserable affairs if rain is persistent, and even light showers mar the joys of bathing-beaches and cause hikers to be encumbered with mackintoshes. It seems, then, as if some form of warm desert climate would suit the large majority of British holiday-makers, the special attraction being the certainty of the days of sunshine.

At the other extreme there are devotees of winter-sports to be catered for; if they could have their way they would arrange a sort of mountain climate made somehow much more accessible. They too, like the summer-holiday folk, would vote for days of sunshine and warmth, and

A GEOGRAPHY OF EUROPE

would differ only in their recreation. The cover of snow necessary for their skis and toboggans implies snow-storms, which rather hamper the perfection of the climate, unless it could be arranged that they occurred only at night. In the same way one might reasonably suppose that the summer-holiday idealists would not object to gentle rain at night; indeed, the cricketers, golfers, and all the other sportsmen who rely on good green turf for their games would welcome such refreshing showers, although ill-equipped campers might object.

These two ideals suggest a third, a combination of the two—*i.e.*, six months of perfect summer holiday followed by six months of perfect winter holiday. All will agree that the intermediate periods of spring and autumn, with their sleet and slush, their unexpected hot and cold spells, their gales, and their sudden showers, would have to be removed altogether.

So far only the pleasure-seekers have been considered. Now think of the same problem—the ideal climate—from the point of view of those arch-grumblers, the farmer and the gardener. They are interested in their crops and their stock. Farmers insist on having both sunshine and rain in their ideal climate, for nothing will grow without warmth and moisture. Further, for all crops there have to be seed-time, growing-time, and harvest-time. For the first two the showers and sunshine of an English April suit admirably, but for the last the farmers demand the sunny dryness of a desert climate. Farmers, then, would be thoroughly satisfied with our climate if only its uncertainties could be removed, but uncertainty is, unfortunately, its most certain factor. Of other climates no farmer will choose as ideal one in which there is no dry season or one in which there is no warm season. Probably his next choice after an idealized British climate would be one that is always warm and always dry, but he would demand some facilities whereby fields could be watered artificially from a river. This would be perfect, for the

MEDITERRANEAN CLIMATE

warmth would enable crops to grow at all seasons while the permanently filled dikes would supply the necessary water. Failing this almost too perfect set of circumstances, what would the farmer choose—rain in the cooler part of the year, or in the hotter? Remember that his ideal is that no season shall be too cold for plant-growth and that a dry harvest-time must be a certainty. Will a farmer choose summer rain or winter rain? The obvious answer is summer rain, providing a water-supply during the hottest weather when the plants need most moisture. The coincidence of heat and rain causes very rapid plant-growth, and the certainty of dryness at the beginning of the very mild winter minimizes the risk of harvesting. Further, if by some means water can be stored for use during winter that season is warm enough for more crops to be grown by irrigation.

But there is much to be said in favour of rain in winter only, especially when the winter is so mild as in no way to check plant-growth. In such a climate the dry summer makes harvesting certain, and the storage of winter rain for use in irrigation channels in summer enables a further series of crops to be grown in the dry season. It should be noted, however, that in both summer-rain-only and winter-rain-only types of climate there should be no need for the farmer to strive for double crops by means of irrigation. The rain and the warmth ought to produce such certain harvests that one set of crops should provide ample food. That is to say, both these climatic types give farmers considerable leisure in which to pursue other activities than the wresting of food from the fields.

The rarity of ideal climates can be further seen by noting those climatic types the disadvantages of which are obvious. Any climate without a definite dry season is unattractive to workers and idlers alike. Similarly, as the warm season decreases in length and the cold season correspondingly increases so climates become less and less attractive.

A GEOGRAPHY OF EUROPE

Summarizing what has been said about ideal climates, three types, all in warm lands, seem to satisfy the requirements: (a) one with summer rain only—*i.e.*, the monsoon or savanna type; (b) one with winter rain only—*i.e.*, the Mediterranean type; and (c) one with no rain but with another water-supply—*e.g.*, in Egypt or Mesopotamia, where large rivers flow through desert lowlands.

The earliest civilizations arose in one or other of these climatic types: Babylon, Nineveh, and Egypt belong to the desert; Phœnicia, Crete, Greece, Rome, and Carthage belong to the Mediterranean; and the old civilization of China belongs to a warm or temperate monsoon land.

This section is concerned only with the Mediterranean lands of Europe, but a long digression has been necessary so that it can be realized that something ideal in the nature of these lands was responsible for their early developments, and that their cultures were in their turn derived from older civilizations in Babylon and Egypt, also in ideal surroundings but of quite a different nature.

NOTEBOOK WORK: 70

Below are figures for five different climatic types in Europe. Discuss their relative advantages from as many points of view as possible.

		JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
A.	{ Temp. Rain.	51 3	52 3	55 3	58 2	64 1	71 1	76 —	77 —	73 2	67 3	59 3	53 4
B.	{ Temp. Rain.	44 5	44 5	45 5	48 4	52 3	57 3	59 4	59 5	57 4	52 6	48 5	46 7
C.	{ Temp. Rain.	25 1	28 1	35 1	48 1	59 1	68 2	73 2	71 1	62 1	52 1	41 1	31 1
D.	{ Temp. Rain.	3 1	6 1	17 1	38 1	58 1	66 2	71 2	67 1	55 1	39 1	24 1	11 1
E.	{ Temp. Rain.	32 2	38 2	46 3	55 3	63 4	70 3	75 3	73 3	66 3	56 4	44 4	36 3

MEDITERRANEAN CLIMATE

II. THE CLIMATE OF SOUTHERN EUROPE

The word 'Mediterranean' is now commonly applied to the climate of six world-regions—the Mediterranean lands, coastal strips in California, Central Chile, and round Cape Town, Perth, and Adelaide. The following argument, which seeks to explain why these west-coast regions on and about latitude 35° have winter rains only and definite summer drought actually, applies more particularly to any of the six regions except the one that specially concerns this book. The presence of the Mediterranean Sea causes so many variations and complications of Mediterranean climate within its borders as to give this region of Southern Europe almost a unique climate. The other five Mediterranean regions of the world have climates distinctly comparable, but Southern Europe and, for example, the Valley of California have as many points of climatic difference as they have features in common. Many peculiarities will be pointed out so that the student will avoid misleading generalities when using the term 'Mediterranean' in connexion with the climates of the southern peninsulas of Europe.

First, the Mediterranean lands are warm lands. This is a vague statement, but in general it may be said that a region ceases to be 'hot' when there is some definite sign of a winter, and a region becomes 'cool' when the winter is established. The natural vegetation is a fairly sure guide, for when the cool season becomes so marked as to check plant-growth, then winter is established. The most obvious sign in Western Europe is the shedding of the leaves of deciduous trees in winter. In Britain this phenomenon is so usual as to be taken for granted, but, as one goes south from England on a winter journey through France to Marseilles, one suddenly realizes, somewhere south of Lyons, that a new region has been reached, for the trees are still green, although it is winter. True, this winter is exceptionally mild and sunny, but it is

A GEOGRAPHY OF EUROPE

certainly winter when compared with the scorching days of summer in the same place. Thus the northern limit of warm lands is marked by the southern limit of deciduous trees (p. 369).

The division between hot and warm lands is that line that separates regions with such an evenly high temperature as never to have a winter from regions where the annual temperature range is quite marked. Hot lands are sometimes described as those in which the mean annual temperature is at least 70° F.

So as regards temperature Mediterranean lands are transitional between the hot and cool belts; summers are hot, but winters are so mild as to be hardly worthy of the name. Recollect, however, that some remarkable exceptions will have to be mentioned.

Mediterranean lands are also transitional rainfall areas, lying between the stormy belt of the westerlies on the polar side and the calms of the horse latitudes on the equatorial side. Previous geographical studies will have explained how, with the apparent swing of the sun north and south of the equator between the tropics, the whole world system of pressure and winds 'moves with the sun.' When the sun seems to be north of the equator the heat equator (as distinct from the mathematical equator) also moves north, and the trade winds, being drawn into the low pressure of the heat equator, also move north, and the high pressure belt of the North Atlantic and the belt of westerlies also move north. The sun seems to move $23\frac{1}{2}$ degrees north, but the whole wind system 'lags behind the sun' and moves north only through about 7 degrees. One of the results of this movement is that certain regions about the border-line of the high-pressure belt come at different seasons under different atmospheric influences. The 'Mediterranean' regions form one group of such transitional areas. When the sun is north of the equator Mediterranean lands come under the influence of the high-pressure belt; they are in a region of calms or only

308

MEDITERRANEAN CLIMATE

light breezes in a generally desert climate. When the sun, however, starts its swing southward the horse latitudes begin to move slowly south too, and very gradually the Mediterranean lands are brought into the southern limit of the stormy westerlies.

This explanation accounts reasonably for the summer drought and winter rains of the Mediterranean lands of Europe, but omits any reference to the effects of (*a*) the Mediterranean Sea, extending east and west through the heart of the transition area, (*b*) the great Sahara immediately to the south, and (*c*) the line of Alpine folds to the north. There are no such complications in any of the other five Mediterranean regions, which consequently have climates that admit of more simple explanation and are more Mediterranean than those of the Mediterranean lands themselves.

The first effect of the Mediterranean Sea is to carry the Mediterranean climate far inland. Low-pressure areas form over the basin of the sea, with its relatively warm water. These depressions have their own wind systems which bring rain to adjacent shores. The passage of the cyclones eastward may at times extend the Mediterranean climate to Persia, and even cause the winter rains in the Punjab.

A further complication with reference to climatic conditions within the Mediterranean basin is caused by the confusion between Mediterranean peninsulas and the countries of which they form perhaps only a part. Iberia is a Mediterranean peninsula. Most of Portugal has the true Mediterranean climate, but Northern Portugal and Northern Spain are both outside the area of summer drought, and are cool, rainy lands with deciduous forests. The heart of Iberia—the plateau of the Meseta, with Madrid in its centre—forms climatically almost a little continent in itself; coastal margins may be Mediterranean, but on the plateau winters are very cold, summers are extremely hot, and light spring rains are hardly

A GEOGRAPHY OF EUROPE

sufficient to prevent the country from becoming desert. Peninsular Italy is a Mediterranean peninsula with a Mediterranean climate, but Northern Italy is neither peninsular nor Mediterranean. Its winters are distinctly cold, and the maximum of rain occurs in summer as thunderstorms (see table at p. 306, figures for E). Only a very small portion of the Balkan peninsula can be called Mediterranean. Greece, nearly all peninsular, and the Adriatic coast have true Mediterranean climates, but in Yugoslavia and Bulgaria extremes of temperature and light summer rains are typical (see figures for Sofia, p. 268).

Furthermore, thunderstorms do occur in summer in the Mediterranean climate, while local winds of the mistral type may cause intense cold in a winter that is normally characterized by its mildness.

NOTEBOOK WORK: 71

(i) Graph from figures for A (Palermo) (p. 306) a typical Mediterranean climate.

(ii) Refer again to the mistral (p. 222). Other special winds associated with the passages of cyclones along the Mediterranean Sea in winter are the bora of the Adriatic (similar to the mistral), the sirocco of Algeria, and the *leveche* of Southern Spain (the last two being hot, parching winds drawn from the deserts of North Africa). Look them up in reference books and write brief notes.

III. HUMAN GEOGRAPHY

This section has reference to the true Mediterranean climate of mild, rainy winters and hot, dry summers, neglecting for a time those large areas of Southern Europe that have exceptional climates. It has already been pointed out that there is something very attractive about the typical Mediterranean climate, and it now remains to be seen how human life has adapted itself to the climatic conditions.

The Mediterranean climate is an ideal wheat climate.

MEDITERRANEAN CLIMATE

Seed-time is in September, when the 'winter' rains are starting; no winter snows discourage growth, but mild raininess soon makes the wheat sprout; harvest is very early, the summer drought making ripening and garnering certain. Such conditions are very different from those, for example, in Norfolk, where winter snow forces root-growth first, spring rains and sunshine encourage a lusty growth from the established roots, but spells of unusual dryness during the later growing season or of unwelcome rains at harvest-time may ruin the whole of a splendid crop.

NOTEBOOK WORK: 72

Make three diagrams to illustrate the relation between climate and wheat-growing in (*a*) the Mediterranean lands, (*b*) the Russian steppes, and (*c*) the Paris basin, all important wheat regions. Draw three long strips and divide each vertically into twelve for the twelve months. Then divide the strips lengthways into four parts, one for temperature figures, one for rainfall figures, one to be shaded, coloured, or illustrated to show the farmers' year of seed-time, growing-time, harvest-time, and fallow-time, and the last for any explanatory notes. For climate figures see pp. 38, 63, and 306.

In Mediterranean lands many fruits, flowers, and vegetables are 'early' when compared with similar crops in more northern lands. This partly explains the recent rapid growth in the flower and vegetable trade from the Western Mediterranean to the big cities of industrial north-western Europe.

The Mediterranean peasant is thus easily supplied with bread and vegetables, and the abundance of grain also enables him to keep poultry, so that he has some meat and eggs. But summer drought prevents extensive pastures, and so cattle are scarce and meat-dishes are not a common part of the diet. The roast joint, without which an English Sunday dinner even among poor people is

A GEOGRAPHY OF EUROPE

incomplete, is a luxury to Mediterranean peasants, who will reserve the killing and boiling of some very elderly fowl only for a special holiday occasion.

Another result of the lack of green pastures is the want of dairy cattle. The lush, cool meadows which are essential for milch-cows are replaced by spiny heath-lands



AN OLIVE-BRANCH

By courtesy of the Greek Legation

where only goats manage to thrive. Consequently milk is scarce, and dairy-butter is almost non-existent. A complete human diet, however, must contain some fatty food. Many plants contain fat in their fruits, and these vegetable fats are butter to many of the world's peoples. The butter of Mediterranean lands is olive oil. In some parts of Southern Europe olive-trees still form forests, but olive-groves to-day are semi-cultivated. The harvest occurs towards the end of the year, and the hard, plum-like green olives are either pickled whole or crushed, by hand or in mills, to extract a series of oils ranging from the clear liquid of the first pressing to thick, inedible fats and pulp

MEDITERRANEAN CLIMATE

later. The best oil is used for cooking in exactly the same way that we use animal-fats like butter, lard, and dripping.

Oranges and lemons, now considered as typical Mediterranean fruits, are actually aliens originally brought from the East. The Mediterranean climate is an ideal fruit climate, provided always that the fruit-trees either are adapted naturally to withstand a summer drought or can be irrigated until the fruit is fully developed. Generally the alien trees need irrigation, but native trees have drought-resisting devices. The evergreen oak has 'felt' on its leaves; the cork-oak develops an extraordinary protective bark; many trees are dwarfed to shrubs; leaves are oily; flowers are everlasting; vines have very long roots; and so on. Both the vine and the olive, native trees, survive the drought without irrigation.

Thus the Mediterranean peasant on only a small holding can provide himself with bread (now he often grows maize rather than wheat, because of the bigger yield), with a vegetable butter, with many fruits and vegetables, and with eggs, while the vines that twine up the sides of his cottage provide him with a clean drink in a land where water is scarce and often impure: coastal dwellers can add fish to this not ungenerous diet.

Cultivated grasses other than wheat yield fibres for linen, mats, bags, and ropes; Italian hemp is the best quality in the world. Mulberry-trees provide food for silkworms, but summer drought checks leaf-growth and limits the gathering of mulberry-leaves. This affords an interesting contrast to the many pickings of mulberry-leaves in monsoon lands, where summer rains encourage rapid growth of new leaves and where industries like the rearing of silkworms, tea-picking, and tobacco-growing, all dependent on leaves, attain a maximum development.

The dryness of the Mediterranean climate encourages the growth of fine fleeces on sheep. We wear thick woollens either when the weather is cold and dry (winter overcoats) or when it is hot and dry (all-wool sun-bathing suits); it

A GEOGRAPHY OF EUROPE

is the *dryness* that matters, for wet woollens either in winter rain or after a summer bathe are most uncomfortable garments. In the same way sheep in rainy climates do not grow good fleeces; their woolly coats, when wet, are just as uncomfortable and unhealthy to them as wet woollens are to human beings. Sheep in dry lands—whether warm or cold, but more so in cold lands—develop the best fleeces, though, of course, there must be enough rain to produce pasture for the animals. Woolly sheep are characteristic of cool, Mediterranean uplands, and Merinos, the finest of all wool-bearing sheep, are associated particularly with the semi-arid plateaux among the Atlas Mountains or with the Meseta of Spain. Carpets, rugs, and fine leathers are typical products of highlands in or bordering the Mediterranean lands.

NOTEBOOK WORK: 73

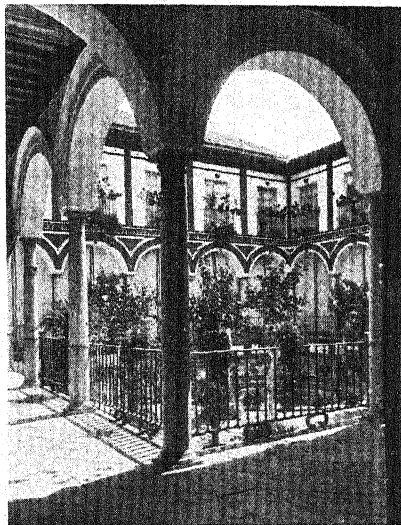
Make two lists, one of products associated with a Mediterranean climate, and the other of products that are certainly not characteristic of these conditions. Group the products under headings: Bread-foods (including potatoes), Drinks, Fruits, Sugar, Animal Food Products (meat, milk, butter), Animal Fibres, Vegetable Fibres, Timber, and others (tobacco, spices, rubber, resins, dyes, etc.).

Houses

Mediterranean homes have little need for elaborate protection, for the genial climate allows people to live out of doors for most of the year. Peasant homes are generally very flimsy structures of wattle, designed rather as temporary shacks for inclement weather than as homes. The fine old architecture of Greece, Rome, and parts of Spain is an importation from desert lands to the south, and the buildings are associated not with home-life but with religion (temples) or with conquest (roads, bridges, forts). Greek architecture was certainly influenced by

MEDITERRANEAN CLIMATE

Egyptian ideas; Rome borrowed from Greece and made the style severely practical; and the style of much Spanish architecture is the result of the long Moorish occupation of the peninsula, which brought with it ideas derived from oasis life in Arabia. Buildings resulting from this desert influence are 'inside out' when compared with our



THE INNER COURTYARD (PATIO) OF A HOUSE IN SEVILLE

Photo E.N.A.

buildings. In Britain every effort is made to render a house light and sunny by having much window-space; in Southern Spain, for instance, the house is designed to give a maximum of shadow, and outside windows often disappear entirely. In Britain houses are built for warmth in winter, their shapes being largely influenced by the arrangement of chimneys. In Spain (and in Algeria, Palestine, Greece, much of Italy, etc.) houses are designed wholly for summer coolness, fireplaces are non-existent,

A GEOGRAPHY OF EUROPE

and the kitchen-range is a small, portable charcoal-stove. In Britain pointed roofs and gables afford a run-off for heavy rain; in Southern Spain roofs are flat. In Britain the garden is round the house; in Spain the house is round the garden. In Britain windows in outer walls are glazed and latched for fear of burglars; in Spain inner walls are safe from intruders, and windows become open arches giving access either directly into the rooms or on to a cloister.

Climate and Culture

The Mediterranean climate is kind; it repays human labour, but at the same time demands forethought and ingenuity: the idler cannot thrive. Yet thoughtful toil for only a short time is rewarded later by considerable leisure. In such climatic surroundings grew some of the greatest of early civilizations. There are some parts of the earth much more bountiful than the Mediterranean lands, but the very plenty militated against civilization just because ingenuity and forethought were not demanded. Other parts of the world are much less bountiful than the Mediterranean lands, but the constant striving for mere existence and the lack of even a little leisure were just as antagonistic to the growth of a culture worthy of the name of civilization. When Greek and, later, Roman civilizations were at their height Europe outside the Mediterranean basin was a land of barbarians, and, moreover, the barbarism persisted for a long time in areas that never came within the Roman conquests. The new and vigorous civilization that eventually developed in the cool lands of Western Europe was founded largely on the culture of its past Roman conquerors. When, only a hundred years ago, the newest civilization of all—the Machine Age—developed, Mediterranean peoples adapted to leisurely conditions failed to keep pace with the hustle of industrialization.

To-day in Europe there are three distinctive cultural

MEDITERRANEAN CLIMATE

regions: the West is one of industrial vigour; the South is one of more genial leisure, but it is being urged to an unnatural competitive activity by new forms of government in Italy, Spain, and to a less extent in the Balkans; while the East—Russia—represents a primitive patriarchal culture on to which yet another new system of government is superimposing an alien hustle. What every thoughtful person ought to understand is that any one of these cultures is not necessarily right or wrong because it is different from the others, and, further, that a system successful with one type of people will not necessarily be equally successful with different peoples. Conflict between the three systems is bound to occur, and it will be the duty of the younger generation to see that such differences lead not to the futility of war, but to the reasonableness of exchanged opinions at orderly conferences.

THE STRUCTURE OF MEDITERRANEAN EUROPE

The floor of the Mediterranean Sea is a trough between Europe and Africa, a distinct inter-continental deep, no more European than African. It is quite different from the shallow seas of Northern Europe, all of which are floodings of the continental shelf, the edges of which mark the real seaward limit of Europe. The Mediterranean Sea represents a great collapse of part of the earth's crust, a foundering of huge blocks. Why this sinking should have happened just here is not exactly known; but it seems that the line of the Mediterranean Sea and its continuations eastward into Asiatic depressions are some great cleavage-plane in the earth.

The most conspicuous feature of the Mediterranean lands is not the foundered blocks, nor their upstanding remnants, but the folded mountains (Figs. 24 and 25). The Alps, the Pyrenees, the Sierra Nevada, the Atlas

A GEOGRAPHY OF EUROPE

Mountains, the Apennines, the Dinaric Alps, and the Pindus Mountains are all formed of strata in varying degrees of folding and overfolding. Chains of islands like the Balearics, those off the Dalmatian coast, Crete, and some of those in the Ægean represent the tops of other folds rising from the sea. To what extent all these folds are inter-related is a matter of doubt: for instance, it is by no means as certain as it looks that the Atlas Mountains and the Sierra Nevada were once connected across the Strait of Gibraltar; the link between the Pyrenees and the Swiss Alps is still in dispute, as is also that between the Alps and the Apennines; geologists have recently made a much sharper distinction between folds that are Alpine and the backwash folds that are Dinaric. In short, there is still much to learn about the structure of the Mediterranean region. Whatever the answers to these big questions, it is quite certain that all the folded mountains of the region have a family resemblance, that they are all a result, not necessarily simultaneous, of one series of compressions and upheavals, and that therefore they are all very much of the same age. Geologically they are young, the Apennines being the youngest mountains in Europe. Earthquakes and volcanic activity are still common throughout the area, showing that settlement after the upheaval is as yet incomplete.

Wherever the chains of the folded mountains are bent sharply there are in the angles hollows that seem to represent sunken fragments. Between the Atlas Mountains and the Sierra Nevada is a very deep sea. The hollow of the Plain of Lombardy lies in the elbow between Alps and Apennines. The lower Danube plain is between Carpathians and Balkans; the Ægean Sea is a deep between the north-south folds of peninsular Greece and the east-west fold of Crete; and the deep Tyrrhenian Sea lies where the Apennines bend sharply through the toe of Italy and Sicily.

It has already been explained that folded mountains

THE MEDITERRANEAN SEA

must be folded against some 'block.' Most of the western Mediterranean Sea, between Iberia and Italy, is a collapsed block of which Sardinia and Corsica are fragmentary survivors. The Atlas Mountains are squeezed between this block and the great African block; the Sierra Nevada are crumpled against the southern edge of the Meseta; the Pyrenees are an upfold between the Meseta and the Central Massif of France; and the Apennines and Dinarics are folded against the eastern edge of the Sardinian block. Notice what variations in the direction of the push these folds imply.

The north-south folds of Greece and the Aegean Islands and the east-west fold represented in Crete are crumpled against either the western edge of the Rhodope block, the plateau of Asia Minor, or the block of Africa to the south: the Eastern Mediterranean has no folds on its African side, the fold that seems to correspond to the Atlas Mountains being in Crete.

This explanation of Mediterranean structure is tantalizing in its incompleteness, but it is better to realize that problems still remain unsolved than to jump to obvious conclusions that actual observations do not vindicate.

NOTEBOOK WORK: 74

Draw a map of the Mediterranean Sea; mark and name the blocks and folds mentioned in the preceding account, shade the deep sea, and note its depth (see Figs. 24 and 25).

THE MEDITERRANEAN SEA

- (i) The Mediterranean Sea is almost landlocked; only the narrow and shallow Strait of Gibraltar gives access to the open ocean.
- (ii) The whole region is within a warm zone; summers are very hot, and winters only mild.
- (iii) Rainfall is scanty, and, at the season of greatest evaporation, almost entirely lacking.

A GEOGRAPHY OF EUROPE

- (iv) Because the rainfall is light, rivers whose basins lie wholly within the Mediterranean region carry very little water into the sea.
- (v) Because the Mediterranean region is girt on the north by mountains and on the south by the Sahara Desert it is the exception for rivers to rise outside the region.

Consider what the foregoing statements imply.

If it were not for the narrow Strait of Gibraltar the Mediterranean would soon evaporate to dryness: a very rapid inflow of ocean water at the strait compensates for the evaporation. But the strait is shallow; therefore only surface water enters, and this water is warm. Consequently the Mediterranean Sea is warm throughout; its deeps are 22° F. warmer than at similar depths in the Atlantic Ocean: moreover, the sea is very salty and is becoming more salty because the rivers and the strait current bring in their loads of salt, but there is no compensating outlet. Long summer evaporation increases the salinity.

At the eastern end of the Mediterranean Sea there is a similar but not so vigorous inflow from the Black Sea *via* the Bosphorus and the Dardanelles; narrow and shallow straits again allow only surface water to move through. The Black Sea is another very deep basin kept filled by the many rivers of Russia and by the Danube, whose sources are, of course, far outside the Mediterranean region of drought. The fresh river water flowing into the Black Sea floats on the heavier salt water, and yet only this surface water escapes by the Bosphorus on account of the shallow ledge; in consequence the deeper waters of the Black Sea are stagnant, sulphurous, and lifeless.

Because the Mediterranean Sea is almost landlocked the tidal wave of the open ocean hardly penetrates. Certain local tides develop in shallower parts—in the North Adriatic, for example—but in general the sea is tideless. Currents too are slight except for the two inflows: water tends to drift from west to east along the south

THE MEDITERRANEAN SEA

coast (see the site of Alexandria), and from east to west along the north coast, but with many variations due to the arrangement of the peninsulas (see the site of Marseilles again).

Here is a sea, warm, salty, and tideless, in a region characterized by sunshine, clear skies, gentle breezes, and few storms. It is certainly ideal for bathing, and many coastal towns on the Mediterranean Sea, especially those easily accessible from cool and cloudy parts of Europe, make most of their living as pleasure-resorts. The sea is attractive also to the sailor; its narrowness, its many islands, its conspicuous landmarks, like volcanoes, and the visibility due to dry air, all encouraged early navigators. It was the "great sea" of the Bible; it was the sea "in the middle of the whole world" to the Romans.

Ease of navigation on the "great sea" discouraged enterprise on the greater sea, the ocean. Although the Phœnicians reached Britain by sea and probably even knew the Cape route round Africa, such expeditions in the ancient world were most exceptional; sea-traffic was mainly confined to the Mediterranean. The Greeks too were great sailors, and to this day they monopolize Mediterranean coasting trade.

But a warm sea, a still sea, a deep sea, and a sea with few currents, is not a home for vast shoals of fish. There are some important fisheries in the Mediterranean Sea (for sponges and coral in the east), but large quantities of salt and dried fish from cold, shallow northern seas are bought by Mediterranean peoples to supplement local supplies of food-fish.

THE MEDITERRANEAN HIGHWAY

As a highway the Mediterranean Sea has had its vicissitudes. As a "great sea" in the middle of the little world known to the ancients it was very important, a position which it retained until the known world ceased

A GEOGRAPHY OF EUROPE

to be little—until the Age of Discoveries. Throughout those long centuries different Mediterranean lands were centres of world culture, and regions outside the favoured basin—the “uttermost parts”—were barbarous wilds whence came savages with furs from the north, gold from the east, and ivory from the south. To the west lay the great ocean ‘river,’ encircling the flat disk of the world. It is not easy to realize fully how startling was the effect of the discovery of a New World. For ages the Mediterranean lands had been a world centre; then with dramatic suddenness the centre shifted—a new continent and a new ocean had been found. It is rather ironical that these discoveries which were to spell disaster for Mediterranean lands were made by Mediterranean sailors and occurred just at a time when the peoples of North-western Europe were first vigorously asserting themselves against a long domination by Mediterranean culture. Nevertheless, Spain and Portugal at first shared all the booty of these new discoveries, while the young nations of the north merely yapped insolently, but occasionally snapped successfully.

It was just before the Age of Discoveries, but not until the peoples of North-west Europe had cultivated a vigorous civilization of their own, that the wealth of Mediterranean ports like Venice and Genoa reached its height. Reference has already been made to the trade between the Hansa cities and the south. Venice, Genoa, and Marseilles are at the heads of gulfs—*i.e.*, as far into the mainland of Europe as they can be—and also at the western end of the Mediterranean Sea—*i.e.*, nearest to the new traders of the north-west. Towns in the Eastern Mediterranean, with the exception of Constantinople, never grew like the western towns because North-eastern Europe was much later than the North-west in settling down to peace and commerce. Before the North-west ‘grew up’ Mediterranean ports were more evenly distributed up and down the peninsulas, and it was not

THE MEDITERRANEAN SEA

until northern trade developed that those ports nearest to the new markets received the impetus that caused them to outrival the peninsular ports.

The first object of the explorers of the Age of Discoveries was not exploration for the sake of knowledge, but the search for a way to the East—a wonderful, mystical East, whence mysteriously came gold, silks, spices, and jewels that made the wealth of Venice and Genoa. These luxury goods of much value in little bulk came mainly by caravan to Eastern Mediterranean ports, where Venetian and other merchants, guarded by Venetian ships, monopolized the trade. Spain and Portugal, unable to participate in this wealth at their back door, sought a sea-way to the East, either round the south of Africa or—most daring scheme—by sailing west to reach east. When eventually both these ways were found the fate of Venice was sealed, for no longer did Eastern produce find its way to the Mediterranean Sea. When the oceans became highways the Mediterranean Sea became a backwater.

By the end of the nineteenth century ocean routes had acquired a new importance, because some of the countries of Western Europe had built vast empires in every part of the world, and links between the colonies and the mother countries became vital concerns. So schemes developed for improving the ocean highways by artificial by-passes to avoid awkward *détours*. The Suez Canal was built to shorten the Cape route, and the Panama Canal to shorten the Cape Horn route.

The Suez Canal has brought the flow of traffic back to the Mediterranean Sea, but it can never restore the old monopolistic importance of the area. There has been some trade recovery, but Venice is more a museum now than a port. Bulky produce like rubber, copra, tea, etc., from the East now passes straight through the Mediterranean Sea on its way to industrial Europe. East-bound or west-bound, the traffic tends to be through traffic, and

A GEOGRAPHY OF EUROPE

the importance of the region has become strategic rather than commercial. The preservation of this traffic artery is particularly important to a highly industrialized country like Britain, which sells its skill and the products of its skill in return for food and the raw materials of manufacture: hence Britain's interest in key-points like Gibraltar, Malta, Egypt, and Palestine. France too is interested in the maintenance of this right of way which leads to her Eastern empire and to her colonies in North and West Africa. Italy has possessions in Africa, while Russia's main sea-outlet to world trade is from the Black Sea through the Mediterranean Sea.

NOTEBOOK WORK: 75

(i) Draw a map to show the new importance of the Mediterranean route with regard to colonial possessions. Mark with different coloured arrows the directions of the interests of Britain, France, Italy, and Russia.

(ii) Tabulate points of similarity and difference in the Mediterranean Sea, North Sea, Baltic Sea, and Black Sea.

(iii) Compare the sites, trade, and hinterlands of Marseilles and Hamburg.

(iv) Draw a map to show why Malta is important. What do you think is the Italian point of view in regard to the British possession of this island?

GREECE

The southern part of the Balkan Peninsula—the narrow, broken, ‘fingery’ Mediterranean part, which seems to be quite a distinctive physical region and is definitely a climatic region—was Greece until 1912; since then the frontier has been extended northward and eastward, in a search for plains and more plains, for peninsular Greece contains very little fertile lowland. In 1913, after the Balkan Wars, Salonika was acquired by Greece; in 1919, after the Great War, the North Ægean coastal plains eastward to within a few miles of Constantinople were given

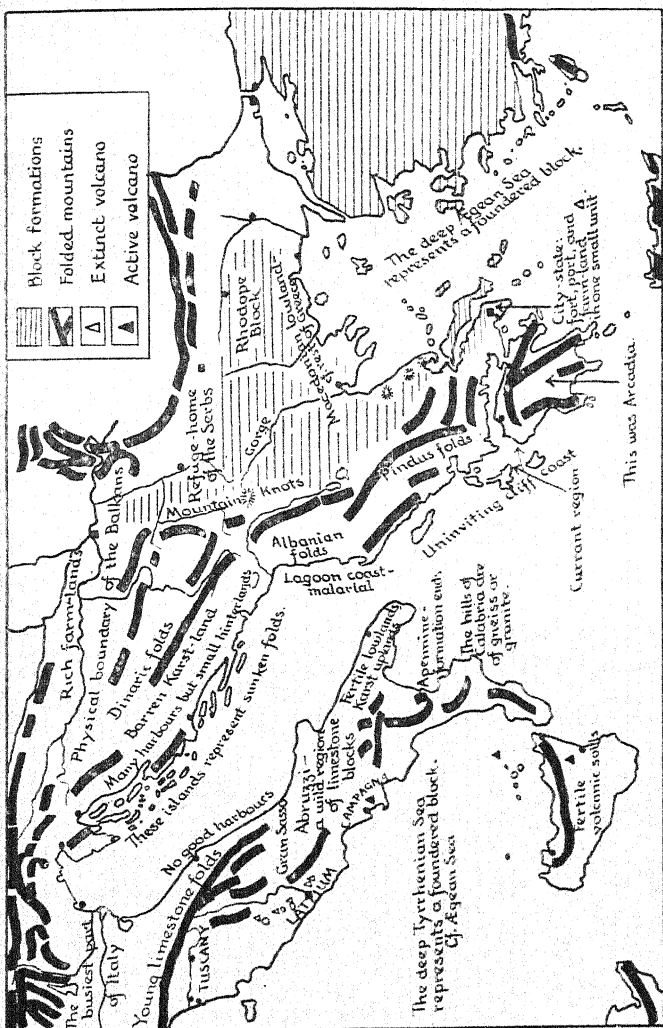


FIG. 24. THE STRUCTURE OF PENINSULAR ITALY AND THE BALKANS

A GEOGRAPHY OF EUROPE

to Greece, together with Smyrna and its hinterland on the coast of Asia Minor; in 1922 Smyrna and Eastern Thrace were lost to a new and vigorous Turkey, at which point the League of Nations stepped in. Difficulties that would have led to war were carefully discussed. Greeks under



A MAIN STREET IN SALONIKA

Throughout Europe, in countryside as well as in large towns, many features still generally regarded as unmistakable characteristics of the various countries and peoples are rapidly giving way to a standard pattern typical of the industrial West.

By courtesy of the Greek Legation

Turkish rule were exchanged for Turks under Greek rule, the immigrants were given a fair start in their new homes, and the whole proceedings culminated in a pact of friendship.

So there are two main regions in the Greece of to-day, the old peninsular portion generally associated with the country and containing the capital and largest town, Athens, and a new, long, narrow strip of lowland across

GREECE

the north coast of the Ægean Sea, containing the second largest town, Salonika. This northern portion may be dealt with first. Tobacco, for 'Turkish' cigarettes, is the most important commercial crop of the lowlands, but wheat, barley, rice, maize, cotton, silk, and the ubiquitous vine and olive are more important crops to the peasant



RUGGED MOUNTAIN-LAND IN THE INTERIOR OF GREECE

By courtesy of the Greek Legation

cultivators. Salonika, at the terminus of the railway that follows the Morava and Vardar valleys, is the only large town of the region. Its sea connexions are mainly with other Ægean ports. Since 1924 Yugoslavia has been allotted a 'free zone' in the town and harbour.

Peninsular Greece is a land the structure of which has always encouraged its inhabitants to lead Robinson Crusoe or, better, Swiss Family Robinson existences, not only on the many islands but also in the small, isolated valleys of the mainland. The early history of Greece shows

A GEOGRAPHY OF EUROPE

that each little unit of the broken land tended to become a separate state with its own capital. At the same time this tendency towards isolation was neutralized by easy intercourse between island and island, bay and bay, across a calm sea. The early Greeks were great sailors and adventurers. It was intense local pride and active



PRUNING CURRANT-VINES

Notice the height of the sticks which support the vines.

By courtesy of the Greek Legation

participation in the politics of the city-states, together with the constant assimilation of new ideas from foreign parts, on which was built that early civilization which is to-day the basis of much of European culture. These city-states, each one quite an independent political unit owning allegiance to no central authority, grew around the Ægean Sea. The straight coast of the western part of the peninsula, the fewer islands, and the dry limestone ridges, all discouraged settlement on that side.

GREECE

The sites of the city-states were selected, with reference first to protection and secondly to food-supply. The rocky hills made natural forts, and at the same time houses on them economized the somewhat scanty arable land. Athens, a hill city, Piræus, its port, the very secluded harbour, and the little fertile plain, illustrate



CLEANING CURRANTS

Notice the stacks of trays on which the fruit is spread to dry in the sun—a process that depends wholly on the certainty of the Mediterranean summer drought.

By courtesy of the Greek Legation

all the essentials of the independent and rather frightened city-state.

Beyond these coastal fringes, with their remarkable culture, lived the barbarians, uncouth people to the ancient Greeks partly because of their languages but mainly because of their amazing lack of independence—the Greeks' chief pride. These barbarians were inland people whose steppe or plateau surroundings had automatically imposed on them an entirely different culture, based on the tribe and consequent mutual dependence. These

A GEOGRAPHY OF EUROPE

barbarians, and especially the Persian armies, did not leave the prosperous Greek city-states unmolested, and yet some sort of loose unity, together with natural quick-wittedness, enabled the Greeks not only to withstand the assaults but eventually to retaliate in the all-conquering expeditions of Alexander. A Greek Empire grew, but then the city-state, the basis of Greek culture, rapidly declined. Soon the centre of culture moved westward to another city-state, Rome, where the cycle of development recurred, to culminate in decline as the Roman Empire grew. Again the centre of civilization moved westward to the new city-states of North-western Europe, where once more their remarkable prosperity led to expansion, to the decline of the city-states, to the establishment of nations and eventually of empires. This sequence is not meant to imply that expansion inevitably leads to collapse, but that the culture suited to the small unit, the city-state, must adapt itself to the bigger unit, the nation or the empire, or perish.

NOTEBOOK WORK : 76

First explain clearly exactly what 'city-state' means. Athens was a city-state; Hamburg at one time actually had its own embassy in Berlin, but since January 1935 the city's independence has been only nominal; Danzig still is a city-state. What different circumstances will cause such independence? Think of the conditions that might cause a man to isolate himself from his community.

Three-quarters of the total value of the exports of Greece come under the heading of horticultural produce, which consists almost wholly of currants from the islands of Zante and Cephalonia, where marly soil contains gypsum and so gives the grapes that special quality necessary for this industry. Oil and waxes, the next most important export group, are the olive-oil of the lowlands and the beeswax of the dry uplands.

Patras, opposite the currant islands, is the chief currant

GREECE

port. Corinth is little more than a village at the head of a backwater, and the small ship-canal across the narrow isthmus is used only by small vessels.

ALBANIA

There is little to be said of this small, rugged, and poor country. Tirana, the capital, and Scutari are only small



XANTHI, IN THRACE

This is an important tobacco port. Notice the minaret.

By courtesy of the Greek Legation

towns. The peasant population is almost entirely self-supporting, growing corn, wine, and olives on the lowlands and keeping sheep on the uplands. The country consists of continuations of the limestone folds of the Dinaric Alps, whence short rivers swirl as torrents in winter, becoming parched gullies in summer.

The position of Albania opposite and close to the heel of Italy gives the country a strategic importance at the entrance to the Adriatic Sea. Italy is anxious that this

A GEOGRAPHY OF EUROPE

doorway shall be Italian, but Yugoslavia, with an Adriatic coast well inside the door, objects to Italian control and to any interference with the neutrality of Albania.

ISTANBUL (CONSTANTINOPLE)

Istanbul and a small hinterland containing the important town of Adrianople, at the entrance to the main part of the Maritza valley, are all that is left now of Turkey in Europe. Istanbul, with its suburbs, Galata and Pera, and Scutari, on the opposite side of the Bosphorus, control the narrow way between the Black Sea and the Sea of Marmora and thence by the Dardanelles to the Ægean and Mediterranean Seas. But one has to look farther afield than the narrow straits to understand the importance of the site of Istanbul, an importance that has grown as the world has grown. In the little world of the ancients Byzantium was at first just one of many Greek fortress-ports, a little self-contained community rather on the edge of civilization. The Romans extended the bounds of orderliness against the barbarians without, and Constantine chose Byzantium (rechristened) as a central strategic capital between his Asiatic and European dominions. Slowly the Mediterranean Sea became a great highway, and Constantinople, in a distant corner where Turk and Crusader fought, declined in importance, but from that centre Turkey established 'colonies' in Europe that were to last till 1913. Then the centre of civilization moved westward to North-west Europe, and Constantinople was long neglected. At length Eastern Europe was infected with Western civilization, and the importance of Constantinople returned. The Crimean War was fought to prevent Russia's acquisition of the Bosphorus, since it seemed safer for the straits to be under the control of the "sick man," as a Russian Emperor once called Turkey, than of more ambitious people. This situation continued satisfactorily until, between 1900 and 1914, it was realized that the

ITALY

"sick man" was being controlled by Germany, and that plans for a Berlin-to-Bagdad bloc across Europe and Asia were well matured. This did not suit Russia, who saw her exit from the Black Sea being effectively stopped; jealousy of power frightened the Western nations; friendships grew strained; the balance of power was breaking; in 1914 the crash came: Russia, France, and Britain united to fight Germany and her allies. The strategic importance of the Dardanelles was soon realized, but the Allied navies and armies failed to force the passage. The treaties after the War have resulted in a modification of the old position of Constantinople. The site was too important to be trusted to any ambitious victor, and to-day Istanbul and the Narrows are still Turkish. Here, then, is a great port between two seas, between two continents, between three cultures, between two religions, between the oldest civilizations and the newest developments. Mountain barriers forbid optional routes; all communications between these vast units must pass through Istanbul.

NOTEBOOK WORK: 77

Write a note about, or draw a map of, the hinterland of Istanbul. This area is a big and difficult problem. You will have to think of the Danube, the Orient Express route, the Dniester, Dnieper, and Don, the Volga too, Turkey in Asia, Persia, and even countries farther afield.

ITALY

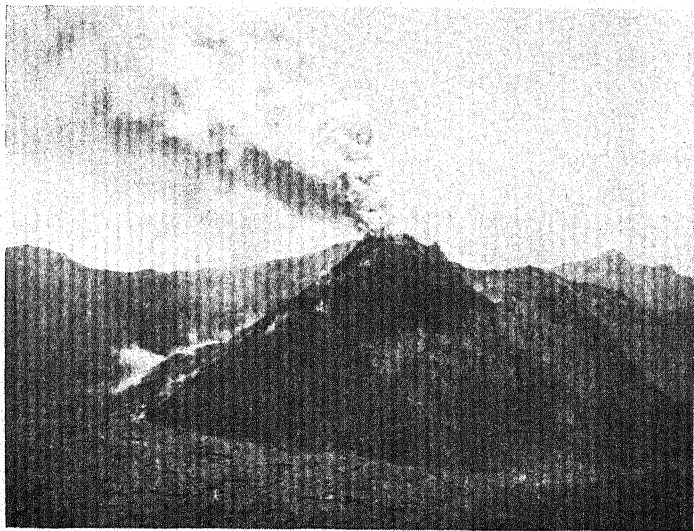
PENINSULAR ITALY

Structure

Peninsular Italy is a long, narrow land consisting in the main of very young mountains of folded limestone, a land where plains are the exception and not the rule, a land of young and comparatively simple river systems. Harbours

A GEOGRAPHY OF EUROPE

are rare and only small, a fact which partly explains why the road-way, and not the sea-way, is typical of Rome. The active volcanoes of Southern Italy are but a remnant of a great arc of volcanic activity around the eastern rim of the sunken block now represented by the Tyrrhenian Sea. The whole of Italy is within an earthquake zone, but



VESUVIUS

A secondary cone of ashes, within the crater of the main cone. The *puy* at p. 209 is a much-weathered volcano.

By courtesy of the Italian State Tourist Department

the most catastrophic disturbances recently have occurred in the south, especially in Sicily. Great landslides on the limestone flanks of the Apennines show that the strata of these young mountains have not yet settled after the upheaval that produced the folds. Peninsular Italy is the youngest land in Europe.

Compared with Italy north of the Apennines, this

ITALY

peninsula is a land of few people and few towns. The climate is attractive, but the areas of arable land are very limited. Moreover, Italy's troubled history has discouraged the peasant, who is not going to spend years of work on the land only to see his labour destroyed in a few hours of destructive war. In consequence some fertile lowlands have been neglected and have become swampy flats where malaria is rife; but to-day, under a new *régime*, much of this unhealthy land is being reclaimed, and already peasant colonies are established on it.

The mountains are wild and lonely places, often snow-covered in winter and parched in summer. Chestnuts from their forests are used instead of potatoes, pines provide useful building timber, and big schemes of reafforestation are being carried through. Other mountain uplands provide pasture for sheep in summer, but the flocks return to the lowlands in winter.

Of the lowland crops wheat is very important, the hard wheat of Apulia making the best macaroni and the straw of the wheat of Tuscany being woven into hats. Maize is widely grown, and forms, as a porridge called *polenta*, the staple food of most of the people. Vines and olives are cultivated in every possible place: the name of Lucca, a small town in Tuscany, is on many of the bottles of finer olive-oils sold in chemists' shops in Britain, but most olive-groves are round Naples. The proportion of land covered by vineyards in Italy is greater than in any other country of the world. The bulk of the wine is for home consumption, but some is exported to France, and a few special qualities reach the world market. Sicily is the world's leading producer of lemons. Other crops are almonds, pomegranates, walnuts, figs, and tomatoes. Mulberries are widespread, but the production and manufacture of silk is much more important in North Italy.

Of mineral products sulphur from the volcanic regions, especially in the Lipari Islands and Sicily, is the most important. Pumice is aerated lava that has been blown

A GEOGRAPHY OF EUROPE

into the sea and cooled suddenly. In structure it is similar to the floating stones, riddled with holes, with which dwellers near Middlesbrough and Barrow-in-Furness are familiar, and which have been formed by the tipping of white-hot slag from the blast-furnaces straight into the



A VILLAGE IN THE PROVINCE OF ABRUZZI, IN THE
CENTRAL APENNINES

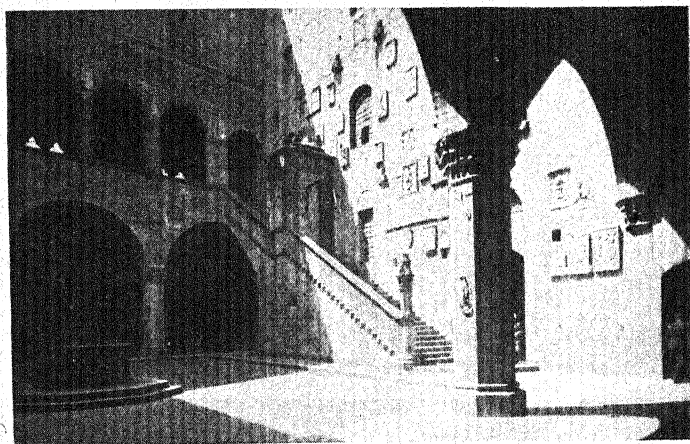
The gorge and the scanty vegetation are characteristic of limestone scenery. The hill-site of the village may have been chosen for protection in less peaceful times, to ensure the fullest use of the small arable low land, to avoid malarial swamps in ill-drained hollows, or to be out of reach of seasonal floods in the stream. For limestone scenery see also pp. 294, 295.

By courtesy of the Italian State Tourist Department

sea. The quarries of Carrara have supplied nearly all the world's statuary marble, and the island of Elba exports iron ore. But Peninsular Italy has no coal and hardly any lignite, and the summer drought implies that mountain streams can provide no large, continuous supply of hydro-electric power. Hence manufactures are mainly

ITALY

of the cottage type, or, if they are on a larger scale, are an artificial development. Coral ornaments are made at Naples and Leghorn, and large quantities of tortoise-shell are also imported to be made into cigarette-cases, combs, and other fancy-goods. Manufactures in Rome consist



A CORNER OF FLORENCE

This picture should recall the story of the origin and wealth of the old city-states.

By courtesy of the Italian State Tourist Department

of jewellery and silks. The market for these petty products is the crowd of tourists.

Towns

There are three main lowlands in the peninsula, and for each there is a town or group of towns. The southern of the three plains—a self-contained unit—has for its capital, Naples, a large city and Italy's second port (despite its somewhat isolated position). Its exports are tomatoes, olive-oil, and macaroni, while raw cotton and jute are imported for local mills. The freedom from

A GEOGRAPHY OF EUROPE

import duties on these raw materials for manufacture partly accounts for the growth of the town. Naples, however, is on the road to nowhere in particular except Vesuvius, and so has become a tourist centre rather than a great port, in no way comparable to Genoa and Marseilles with their wealthy hinterlands.

The northern of the three plains is Tuscany, through which the river Arno flows. At the seaward end are Pisa and Leghorn, and at the landward end, where passes and a railway lead over the Apennines to busy Northern Italy, is Florence—a bridge-town, a river-junction town, a hill-town, a central town in a fertile plain, a town full of artistic treasures, and an old city-state.

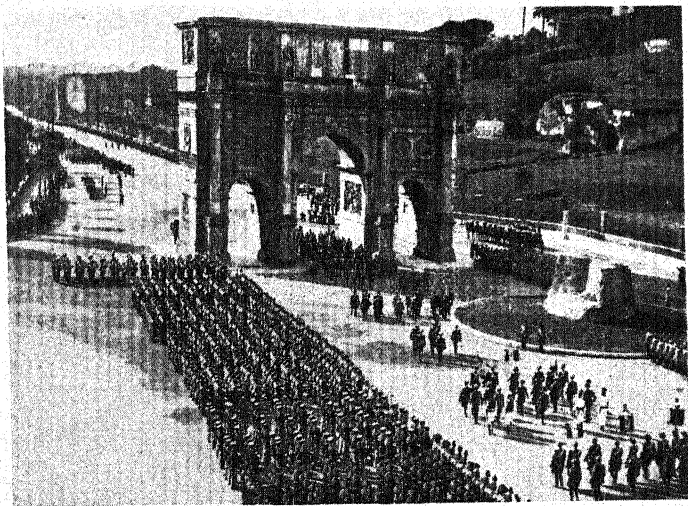
NOTEBOOK WORK: 78

Draw a map that shows how the traveller from Northern Italy to the peninsula has the option of routes, all of which converge on Rome. Show the Apennine barrier and the rivers Arno, Tiber, and their tributaries. Show a west-coast route limited northward by mountains, an east-coast route limited southward by mountains at about Ancona, the Arno route, the pass from Bologna to Florence, and two routes through the Apennines south of Florence and Ancona.

Rome is central in Italy, but not a good centre; it is nodal for routes, but no route is easy, and its original site as a hill-fort and port combined is now meaningless. Far removed from the busiest and wealthiest part of Italy, Rome is a capital now not for geographical, but for sentimental reasons. It recalls the glory that was Rome, a great empire held by strong rule, the courage of Roman soldiers, wise laws, and united effort. Unity is the creed of the Italian Fascists, whose name is derived from *fascis*, the Roman symbol of unity and strength. Until 1870 there was no united Italy, but a collection of independent states or possessions of other Powers. The structure of the country encouraged this piecemeal division, and it is obvious from a physical map that Lombardy, Tuscany,

ITALY

Rome, Naples, and Sicily are only some of the larger natural regions almost isolated from one another by uplands. Disruption in Italy went to greater extremes, for even separate towns within a single region became jealous and hostile city-states. Yet throughout the land



A FASCIST PARADE IN ROME

The magnificent Arch of Constantine, the ultra-modern concrete road, the Roman salutes, the new uniforms, and the mass discipline shown in this photograph form a strange mixture, which can, however, be partly explained by a study of the geography of the Italian Peninsula.

By courtesy of the Italian State Tourist Department

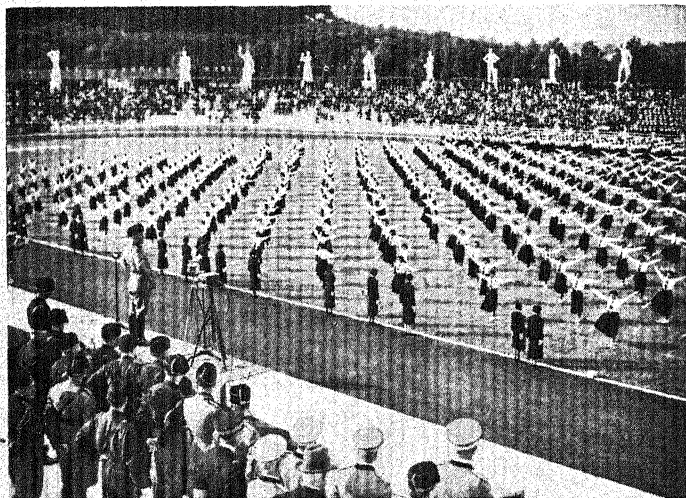
people were for the most part Italian, the only unity in a diverse land, and this, together with the glamour of the word 'Rome' was and is the foundation of the Kingdom of Italy and the Fascist State.

NOTEBOOK WORK: 79

Draw a map of Peninsular Italy and Sicily, and show the highlands and the small plains clearly. Mark the main

A GEOGRAPHY OF EUROPE

railways and the following towns in addition to the ones mentioned in the preceding sub-section: Palermo, Marsala (which gives its name to a well-known wine), Messina, Brindisi (a busy air-port), and Otranto (a naval station at the entrance to the Adriatic Sea).



A PARADE IN THE STADIUM AT ROME

By courtesy of the Italian State Tourist Department

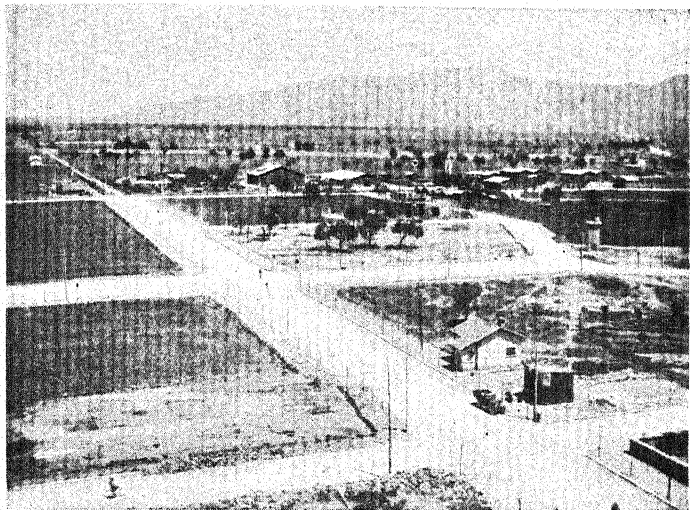
NORTHERN ITALY

NOTEBOOK WORK: 80

Draw a map to show the extent of Northern Italy. There are three main regions: (a) the plain of the river Po, bounded on the south by (b) the Apennines (show the Arno basin so as to link this map to previous studies) and on the north by (c) the Alps. Notice the Alpine frontier of Italy: (a) the southern bulge of the Swiss frontier to include part of the Ticino route to the St Gotthard Pass, (b) the northern sweep of the Italian frontier in the east of the Alpine region, and (c) the eastward extension to include Trieste and Fiume. The acquisition of territory after the last war was referred to at p. 261. Mark

ITALY

the Italian lakes, which occupy old glacier valleys; note the shapes and the steep sides, and recollect the Norwegian fjords and the Swiss lakes. Note the delta of the river Po and the lagoon coast, and recollect the Rhône delta and Sète. Certain general features can be marked on the map with letters



A NEW AGRICULTURAL COLONY SOUTH OF ROME, IN WHAT WAS
ONCE A MALARIAL MARSH

An example of good constructive work under the Fascist régime in Italy.

By courtesy of the Italian State Tourist Department

and a key to correspond. (a) The Apennines are a limestone range; note the scarcity of the rivers coming from the Apennines, compared with the many Alpine tributaries of the Po. (b) In consequence the river Po has been pushed over towards the Apennines by the deposited loads of the Alpine tributaries, so that it is not central in the plain (*cf.* pp. 257 and 286, where similar displacements of the river Danube were mentioned). (c) The Alpine wall is very steep in the west, but (d) in the east there are foothills; (e) between the upper Adige and Piave (east of Lake Garda) are the Dolomites, magnificent and fantastically coloured towers and pinnacles of limestone;

A GEOGRAPHY OF EUROPE

(f) farther east lies the Karst of the peninsula of Istria; and (g) to be connected with Northern Italy, although not physically a part of the region, are the Italian Riviera and Genoa.

The Alps

Of the area covered by the map in Exercise 80 by far the most important part is the plain, but the Italian Alps will be briefly described first. The successive upward zones of vegetation—deciduous forest, coniferous forest, and alp—are repeated as in Switzerland, but because of the general southern aspect all the belts move higher up the mountains, the snow-line being generally about a thousand feet higher in Italy than in Switzerland. Lumbering and pastoral occupations with seasonal migrations are characteristic, and the tourist industry is important, for the lake-sides in the sheltered valleys are favourite resorts, mild in spring and cool in summer.

The Trentino is the name of the Alpine province acquired from Austria after the War for both racial and strategic reasons.

The Karst (Carso) is a name applied either specially to the limestone lands of Istria or more generally to any such limestone areas, which are characteristic of the Dinaric Alps throughout their length.

Bare white limestone stretches over wide areas between scanty patches of thin grass. The rain that falls is absorbed into the underlying rocks, and there forms subterranean watercourses and deepening lines of caves. . . . Joints are widened into open grooves, and fantastically etched ridges stand up between them. The drainage is vertical rather than horizontal. . . . The limestone region thus supports a double life; one on the plateau, limited by lack of water, which is gathered in cisterns for the flocks; and the other along magnificent streams, coming pure out of the limestone, but limited by lack of alluvial expansions on which to develop farms and towns.¹

¹ *The Growth of Europe*, by Grenville Cole.

ITALY

The Northern Plain

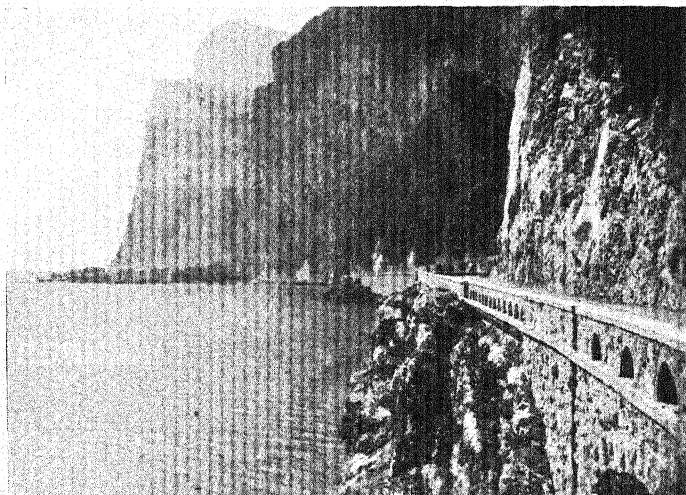
Recollect first that Northern Italy is not peninsular and is not Mediterranean in climate, but is a transition region between the true Mediterranean climate and the continental climate of interiors. Winters are very cold and sunny, but little rain or snow falls; summers are very hot, sultry, and thundery. Climate figures for Milan are given at p. 306 (E).

The plain was once a gulf of the sea, now filled with deep soils brought by rivers and glaciers from the surrounding mountains, and in the course of transport sifted so that the stony rubble was deposited sooner than the fine silts. Hence the best arable land is around the river Po, but the soil towards the mountains on north and south becomes coarser, and among the moraines at the ends of the Italian lakes too poor and rocky for cultivation. Farmers on the plain have rich meadow-land for dairy cattle (not at all typical of the Mediterranean climate), Parmezan and Gorgonzola cheeses being well known. Maize, wheat, and rice in riverine swamps provide bread-crops. The vine is grown almost everywhere, but the wines of Asti are particularly famous. Wool from the sheep on the upland, silk from the caterpillars fed on mulberry-leaves, cultivated flax and hemp—these are all fibres of the plain. The olive is not grown, but apples (which are notably *not* a Mediterranean fruit), walnuts, and chestnuts are common, especially in the valleys of Piedmont. In general, then, the plain is a rich agricultural land of produce varied enough to encourage dense population.

In this part of Italy there started that Renaissance—that rebirth or revival—which affected all subsequent European history: that is to say, the Plain of Lombardy must have had certain peculiar qualities of surroundings which encouraged there the growth of a new culture. Let us consider the region from this aspect, emphasizing geographical rather than historical views. The plain is a

A GEOGRAPHY OF EUROPE

fertile low land. In site it is just clear of the disadvantages of the summer-drought region to its south, and yet not so far north for the climate to be in any way harsh. It was near to Roman civilization at its best, and had a formidable natural rampart against northern barbarians. Here were the two essentials for early settlement—safety



PART OF A NEW ROAD ALONG THE SHORE OF LAKE GARDA

At one time the Lake Garda valley was a fjord on the coast of a sea that filled the Lombardy hollow. Compare this view with those at pp. 23 and 35.

By courtesy of the Italian State Tourist Department

and fertility. This was a land of comfortable, independent homesteads, as distinct from, for example, the tents or the protected villages of nomadic tribes on the steppes, or the hill-towns overlooking the too little plains of Greece. But variety of crops in the plain must soon have led to the founding of crafts and so to the formation of villages, not as huddled refuges but as centres for exchange. The farmers, instead of being Jacks-of-all-trades, brought their wool to the weaver, their grain to the miller, their plough

ITALY

to the smith, and so on. There is the birth of a community organized into town-folk and country-folk to the mutual advantage of both.

With its mountain-walls on two sides and its central river, the town and village sites of the Plain of Lombardy are comparable to those of the Rhine Rift Valley, which have already been described. So Turin corresponds to Mainz, Venice to Basel, Milan to Strasbourg, and so on.



PART OF THE SHORE OF LAKE GARDA

By courtesy of L. A. White

In both valleys the riverine marshes have few and only small towns. So far no special quality of the Lombardy Plain has been mentioned to distinguish it from any other rich farm-land—for example, the Paris basin, the London basin, or Aquitaine. We must refer again to its site adjacent to Rome, the city-state which borrowed many of its ideas from Greece. The towns of Lombardy automatically became city-states, not because the plain naturally subdivides into little units (it does not: it is one unit), but because the city-state was the normal development in Peninsular Italy, whence Lombardy received its culture.

A GEOGRAPHY OF EUROPE

Throughout the Dark Ages and early Middle Ages, when the city-state idea was lost in a search for a larger unity like a holy empire embracing all Christian people, the cities of Lombardy somehow retained that earlier pride and independence as cities. When, in the sad confusion at the collapse of various 'holy' empires, man naturally sought the solution of his problems in a reversion to the 'good old days' before such grandiose schemes were devised, one obvious answer was a return to the simple independence of the city-state—an idea which developed from Lombardy, where touch with ancient Greece and Rome had never quite been lost. The Renaissance, born in the plain, was a protest against the idea of an unwieldy Christendom—a plea by Northern Italy for a return to the glories of the city-states of ancient Greece and Rome.

There is no space in this book to tell of the wealth and magnificence of Lombardy in Renaissance times, of the spread of classical tradition, of the Reformation which sensed the danger of its paganism, and of the disastrous rivalries, like those of the Greek cities, which ultimately ruined the great cities of Northern Italy. Many towns like Verona, Padua, Mantua, Pavia, and Bologna are to-day mere museums, preserving in their wonderful old buildings some relics of a most luxurious past. But now there is a new awakening to prosperity, thanks to pre-War German commercial enterprise (*via* the Alpine passes), to the development of hydro-electric power from the mountain streams, and to a dominating personality in Mussolini. The motor-cars of Milan and Turin (Bianchi, Isotta Fraschini, Alfa-Romeo, Fiat, Itala, Lancia) have a world reputation; the manufacture of silks, artificial silks, and woollens is increasing; and the whole countryside is dotted with small but busy factories in an effort to make a self-supporting Italy.

It is unfortunate that the main river of the plain ends in an unnavigable delta, and that throughout its course on the lowlands navigation is difficult. The result is that

ITALY

the movement of trade tends to be always across the river, seeking passes through the Alps and Apennines. At the seaward end of the plain is Venice. Adria and Ravenna, two other old ports that once enjoyed remarkable prosperity, are now fourteen and five miles respectively from the sea, in the unpleasant surroundings of a mud delta. Venice, originally a refuge site from invading northern barbarians and later a fishing village, grew to be mistress of the Mediterranean. The story of the spice trade, the Hansa trade, the site at the head of the Adriatic Sea, the convenient Brenner Pass, the Age of Discovery, and the decline of Venice has been referred to in previous pages. To-day the port struggles; some shipbuilding goes on, seaplanes are made and tested, and some cottons are manufactured, but the wealth of the city is derived from tourists, and Venetian glass is still made for this market.

After the last war Trieste was ceded to Italy by Austria-Hungary; Fiume was later seized, to the annoyance of both Yugoslavia and Hungary. The hinterlands of both Trieste and Fiume are not Italian, but Italy objects to any foreign Power coming within the Alpine rampart.

Genoa seems to be shut in by the Apennines, but the Bochetta Pass gives access to the Plain of Lombardy, so that Genoa's hinterland is not a mere strip of Mediterranean coast, but the whole of the northern plain of Italy and beyond, *via* Alpine passes, to Switzerland. Spezia, farther east, is an Italian naval base corresponding to Toulon as regards site, importance, outlook, and duties.

NOTEBOOK WORK: 81

Draw a town-site map of Northern Italy. Show once more the Alps, Apennines, lakes, Po, and delta. Mark clearly the following passes: Mont Cenis, Simplon, St Gotthard, Brenner, and Bochetta. Mark the following groups of towns distinctively: (a) North Apennine route (Emilian Way) (Piacenza; Parma, Bologna, Rimini, Ancona); (b) route south of the Alps (Turin, Milan, Verona, Venice, Trieste); (c) the pass

A GEOGRAPHY OF EUROPE

routes leading to Turin, Milan (two routes), Verona, Trieste, and Genoa; (d) the Riviera coastal route. Show the swampy lowlands of the river Po that the routes avoid.

SOME STATISTICS ABOUT ITALY

See also Figs. 26, 27.

EMIGRATION

1930, 280,000 emigrants; 1932, 83,000; 1934, 176,000.

ITALIAN TRADE

Excess of Imports over Exports, in Millions of Lire

1925, 8162; 1927, 4925; 1929, 6429; 1931, 1433; 1933, 1441.

Values of Imports and Exports, in Millions of Lire

1925		1934	
IMPORTS	EXPORTS	IMPORTS	EXPORTS
26,459	18,297	7,664	5,231

Chief Exports in 1933, in Percentages of Total Value

Manufactures of all kinds	50
Foods of all kinds	32
Vegetables and fruits	19
Silk and artificial silk	14

Chief Imports in 1933, in Percentages of Total Value

Raw materials of all kinds	47
Cotton	12
Wool	8
Foods of all kinds	23
Cereals	4

Trade with United Kingdom in 1933, in Percentages of Total Value

PRINCIPAL EXPORTS TO UNITED KINGDOM		PRINCIPAL IMPORTS FROM UNITED KINGDOM	
Lemons	8	Coal	42
Artificial silk	6	Machinery	7
Canned vegetables	5	Woollens	4
Cheese	4	Motor vehicles	3

SPAIN AND PORTUGAL

SPAIN AND PORTUGAL

The peninsula of Iberia contains in what seems such simple, square solidarity an extraordinary variety of structure and land-forms; blocks and folds, basins and canyons, estuaries, rias, and deltas—all are represented in this one peninsula. The diversified and broken nature of the surface impedes communication between different parts, and promotes disunity among the people. It is no wonder that separatist movements characterize the politics of different regions.

You really require a relief map to understand Spain. You then see that physical barriers cut up the country into a series of self-contained units. These barriers are so high that the various peoples who inhabit the peninsula seldom mix together, and that is why even to-day men think of themselves not as Spaniards but as Galicians, Castilians, Basques, Catalans, and Andalusians. . . . The Andalusian is the Spaniard of film and fiction; the fellow with the dark hair, a sombrero with a chin-strap, side-whiskers, a guitar, a dagger, and gallons of hot blood. Foreigners regard him as the typical Spaniard, while Spaniards regard him as an interesting racial phenomenon. Just as we in Britain label our people with certain traditional virtues and vices—the meanness of the Aberdonian, the hard-headedness of the Yorkshireman, the inaccuracy of the Welsh, and so on—Spain attributes various qualities to the regions that compose it: the Castilian is proud, the Aragonese is stubborn, the Catalan is commercial, the Manchegan is dour, and the Andalusian is exuberant. . . .

“You will soon learn that there is no such thing as Spain,” says the Spaniard with a smile. “There are many Spains. I am a Castilian. I find it difficult to understand a man from Valencia. In Andalusia I am in a strange land. I cannot understand a word of Catalan. Spain is really a collection of small kingdoms which were once independent—all different. You in England take your idea of Spain from novels and films. These all deal with the South—with Andalusia, where life is slow and lazy, and

A GEOGRAPHY OF EUROPE

where men do sing songs and kill each other for love. But look at Castile. Look at this dead plain like a sea. Look at those mountains with snow on them. Castile is over 2000 feet above the sea. We say, 'Nine months of winter and three of hell!' Yet this is the very heart of Spain."¹

STRUCTURE AND REGIONS

Iberia consists of an old block with folds on its north and south-east edges. Upland basins occur on the plateau, but lowlands are found only here and there around its edges. The block of old crystalline rocks, the Meseta, is tilted to the west, and diversified by ridges, or sierras, which separate wide, shallow basins of relatively recent and more fertile rocks. There are four basins: (a) Old Castile or Upper Douro and (b) New Castile or Upper Tagus, in the heart of Spain, (c) the Ebro basin in the north-east, and (d) the basin of Andalusia or the Guadalquivir in the south. Where the block reaches the sea in Galicia, at the north-west of the peninsula, there is a replica of the coastal types found in Brittany and Cornwall.

The Sierra Nevada, crumpled against the south of the Meseta, are true Alpine folds, which continue seaward as the Balearic Islands. Whether the Sierra Nevada continue across the Strait of Gibraltar in the Atlas Mountains is a matter of dispute.

The Pyrenees and Cantabrian Mountains are also folds which probably rose before the Alpine storm, as they do not show the intensity of overfolding characteristic of true Alpine mountains, although both ranges were re-elevated at that period.

NOTEBOOK WORK: 82

Draw a structural map of Iberia (see also Fig. 25) to illustrate the account given in the last sub-section. Mark and name mountains, rivers, and lowlands.

¹ Quoted by permission of Mr H. V. Morton and the editor of *The Daily Herald*.

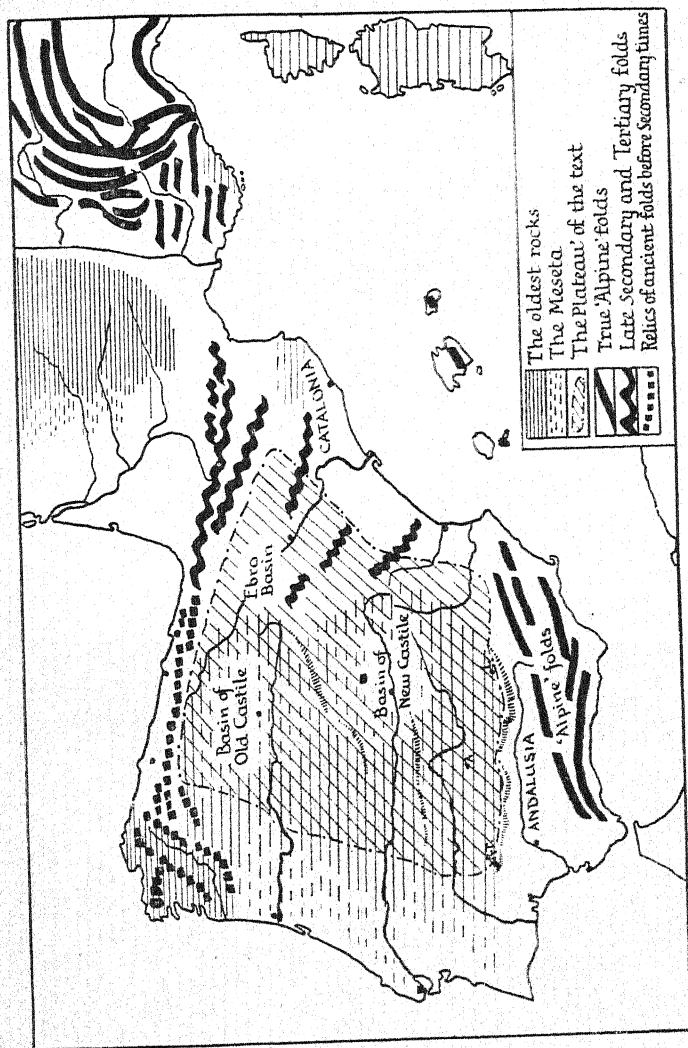


FIG. 25. THE STRUCTURE OF IBERIA

Both the Cantabrian M. urains and the Pyrenees were re-elevated in the Alpine storm, but the consequent folds were not of the intensity characteristic of true 'Alpine' folds.

A GEOGRAPHY OF EUROPE

CLIMATE AND VEGETATION

Many climatic features have already been discussed (pp. 307-310). Only a part of the west and south-west coastal areas have the true Mediterranean climate; corresponding east coasts have a similar climatic type modified by their lee site, the rainfall being less and the summers hotter. The north-west and north coastal regions, outside the Mediterranean transitional area, have ample rain at all seasons, with a winter maximum. The centre, as already explained (p. 309), is an exceptional climatic region: winters are extremely cold; summers are intensely hot, but modified by altitude in many parts; rain is always scanty and falls (often as snow) in autumn or spring, when the high-pressure system which forms with the winter cold is either not fully developed or is beginning to give way.

NOTEBOOK WORK: 83

(i) Draw a diagrammatic section from north to south across Iberia to show structural regions—folds, the block, and its sierras. Above the section write two sets of notes, one on climates and another on vegetation. For the latter note (*a*) the deciduous forests and meadows of the northern folds, (*b*) the sub-tropical Mediterranean vegetation of the south (many cultivated plants are distinctly tropical—*e.g.*, rice, sugar-cane, dates, cotton), and (*c*) the steppe-land, semi-desert, and even desert types of the centre, but with Mediterranean evergreens in favoured valleys.

(ii) Draw a diagrammatic section from east to west to show structure—the tilted Meseta. Write climate and vegetation notes above the section.

POPULATION

The distribution of population in Iberia is only partly accounted for by structural and climatic conditions. A region of diverse mountain-types suggests possible mineral

SPAIN AND PORTUGAL

wealth, which may attract a large population to inhospitable regions. Further, man may by his ingenuity make barren places fertile. These and other factors, mainly historical, account largely for the present distribution of population in Iberia.

The Peninsula was, to the ancients of the Eastern Mediterranean, a 'far west' at the end of the "great sea" and too near the mysterious ocean 'river,' a remote land whence daring sailors sometimes returned with copper or fine wool. In the eighth century the Mohammedan invasions were at their height. Europe at the time was in a sad plight. The western Roman Empire had collapsed, and the eastern one was threatened by invasions; barbarians were raiding Western Europe, and Slavs were being driven westward before conquering Mongols, who had reached the central Danubian steppes. At this stage the Islamic movement was at its strongest. Constantinople, the capital of the eastern empire of Rome, managed to withstand the assaults of Mongols on its north and Mohammedans on its south. Westward along North Africa came all-conquering Islam, and only the Mediterranean 'ditch' prevented their wholesale conquest of Southern Europe. At its western end the 'ditch' narrowed, and soon the Mohammedans possessed Sicily and Iberia.

It is wrong to think of these desert peoples as fanatical dervishes; they conquered, but they colonized; they settled, and did not loot.

The Moslems were friends to learning, . . . and during the period of their rule the Spaniards were in touch with all the culture of Moslem countries as far east as Persia and India. . . . Spain and Portugal were not cut off from either. the trade or civilization on which the Roman Empire had flourished; and we find that the Dark Age was not shared by these countries.¹

The Moors introduced into Spain the plants and methods of cultivation typical of highly developed oases

¹ *The Intelligent Man's Guide to Europe*, by G. D. H. and M. I. Cole.

A GEOGRAPHY OF EUROPE

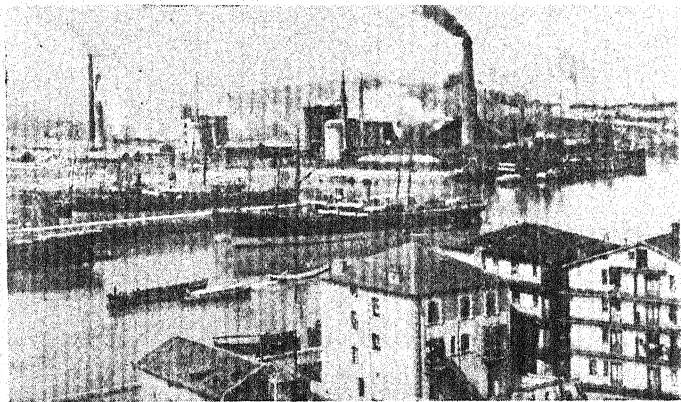
like Egypt and Mesopotamia; dates, sugar-cane, and oranges were grown in Europe for the first time. The Moors also developed the mines and manufactured textiles and metals. By the ninth century Spain was the most civilized land in Europe, and was to remain so for a long time. But because the Moors who instituted this culture were not Christians Western Europe waged fanatical religious wars against them.

Iberia was thus isolated from the rest of Europe until, in the fifteenth century, the Moors were expelled. At the same time occurred the discovery of the New World. Spain soon amassed a fortune from loot in America and most jealously guarded the treasure and its source. The result was a new isolation, this time without the invigorating influence of cultured Moors. Meanwhile North-west Europe was forging ahead, and later the Industrial Revolution established these countries as the centre of a new culture. The wealth of Spain shrivelled, and once again the country became an outlying 'colony' whence hustling industrialists took extra supplies of iron, lead, and copper.

The few centres of dense population in Iberia reflect various stages in this chequered history of alternate glory and poverty with continuous isolation. The densest population, and one of recent and rapid growth, is around the iron-mines of Bilbao, on the north coast—*i.e.*, in the region with easiest access to industrial lands farther north. In Andalusia and Valencia the dense population is accounted for by the results of Moorish occupation, the elaborate irrigation works, the fertility, and the varied crops. Barcelona is the only port on the east coast of Spain with a large hinterland. The city has always shared in Mediterranean trade, but its very rapid recent growth has been due to its somewhat artificial industrialization. In Portugal the isolation has not been so complete; the whole coast is on a main ocean highway: population decreases in density from the rainier north to the dry

SPAIN AND PORTUGAL

south. Madrid is a capital mainly on account of centrality of site. Thus the population of Iberia is clustered in patches around the rim, and for each region of dense population there is a different explanation. In the rest of the Peninsula high mountains, hard rocks, and scanty rainfall lead to scanty population.



AN ORE PORT NEAR BILBAO

How many ore boats can you count? Are they loaded or not? Which boat is being loaded? What are the numerous works? This part of Spain is, of course, unique in its industrial activity.

Photo E.N.A.

NATURAL REGIONS

Central Spain

The train ploughs its lonely way south through a bleak, dead, mountainous land. The early sun is already warm, but there is snow on the mountains. Far to the west the hills rise and fall towards the mountains of Cantabria; to the south, ridge against ridge, lies the Sierra Guadarrama.

So this khaki land of mountains, harsh and bleak as a moonscape, is Spain! How different from the flat, languid, fruitful Spain of popular imagination! . . . I look down into deep, waterless river-beds littered with boulders. . . .

A GEOGRAPHY OF EUROPE

Little beds of fertility dot the Castilian plain. Clumsy carts drawn by mules harnessed one behind the other plod over the white roads. Old villages, with the wreck of medieval walls embracing them and church towers rising high above them, lie in the perpetual shadow of the mountains. This is Old Castile, sentimentally and historically the very heart



IN THE VALLEY OF THE UPPER TAGUS

By courtesy of the Portuguese Information Bureau

of Spain—a hard, extreme land that knows the bitterness of cold and the violence of heat, a land inhabited by frugal farmers whose little homes seem literally to grow out of the stony earth. . . .

A flat plain, the colour of cocoa, stretches to the sky. It is as monotonous as the sea. Windmills, standing on slight ridges, ride the flatness like ships. Big, windy clouds sail up into the sky, and, as in Holland, the eye is continually leaving the landscape to admire the skyscape where great argosies, that change into armies and slowly dissolve into angels, move in gold against the blue.

SPAIN AND PORTUGAL

The brown road lies straight as a spear across this flat land, hedgeless, ditchless, running on right to the sky over the unfenced plain, leading to little white villages soaked in sunlight.

The villages stand with their deep, twisted roots in the Middle Ages, and their scanty branches in the Republic.



A VILLAGE NEAR MALAGA, WITH THE SIERRA NEVADA IN THE
BACKGROUND

This view is much more typical of Southern Spain than the somewhat
exceptional one at p. 358.

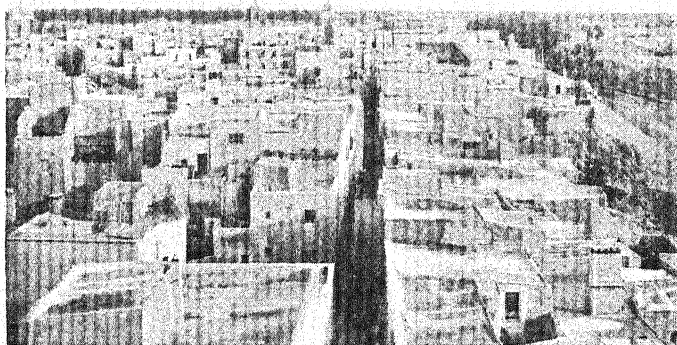
Photo E.N.A.

They are all the same to look at: a sprawling Baroque church, yellow plaster peeling, a cracked bell swinging in a little tower, a stork standing in its tidy nest, a plaza ringed with acacia-trees, an ornate fountain where graceful brown girls stand with jars poised at their hips, a tangle of blinding, white streets on whose doorsteps the milkman milks his goats. The shops, instead of signs or names, hang outside

A GEOGRAPHY OF EUROPE

a sample of their wares so that those who cannot read may know what to find inside. . . . This is the immortal La Mancha, the country of Don Quixote.¹

There is little to add to this geographical description. Where agriculture is practised in more favoured areas the bread-crops are wheat and rye; in fertile valleys vines



ELCHE, IN THE SOUTH-EAST OF SPAIN, BETWEEN MURCIA AND ALICANTE

Houses and streets like these signify a climate approaching the hot-desert type. Notice the lack of chimneys generally.

Photo E.N.A.

and olives grow; heaths support merino sheep, and esparto grass, used in paper-making, is an important commercial crop of poor steppes. The mining centres are mainly in the south edge of the Meseta: Linares (lead), Almaden (mercury), and Rio Tinto (copper) are all on or near the southern scarp, the Sierra Morena.

Towns are few. To ensure a water-supply they are built on or near rivers, which, however, flow in canyons

¹ Quoted by permission of Mr H. V. Morton and the editor of *The Daily Herald*.

SPAIN AND PORTUGAL

and give little room for the growth of cities. Valladolid, the centre of the important wheat region of Old Castile, is a route centre on a tributary of the upper Douro. Toledo, still famous for its swords, the steel for which now comes from Sheffield, is a rock-fortress site on the river Tagus. Madrid, farther upstream on a tributary, is a central capital. The diversity of structure and the tendency towards disunity have been mentioned. Madrid is a control centre between these often unruly sections of the country. The radiating railways should recall similar foci at Berlin and Moscow, but the building of railways to Madrid, in the centre of a high plateau seared by ridges and gorges, has been a more difficult and expensive task than on the northern plain of Europe.

The Ebro Basin

The river Ebro rises in the rainy Cantabrians. Only the upper basin is in a region of ample rain, the remainder being a dry steppe-land typical of the plateau. Wheat, vine, and olives are grown, irrigated by the waters of the river, and shepherds migrate with their flocks in summer to the Pyrenees or to the sierras, and in winter return to the lower lands. Zaragoza is the central market of the basin, and its importance as a railway junction has been increased by the new line through the Pyrenees from Pau (p. 216).

NOTEBOOK WORK: 84

Compare the Ebro basin and the basins of any other rivers between block and fold—*e.g.*, Maritza, Rhône.

Coastal Regions

Andalusia. This southern region is more typical of Spain, as popularly pictured. It is the land of Seville oranges and sherry, where Moorish occupation has left its plainest

A GEOGRAPHY OF EUROPE

imprint—not only in buildings like the Alhambra of Granada, but in the box structure of small houses, the narrow streets, the shops with open fronts, the grilles of windows, and the veils of women.

Between the scarp of the Sierra Morena and the Alpine folds of the Sierra Nevada is a low land, filled with deep,



TERRACE CULTIVATION

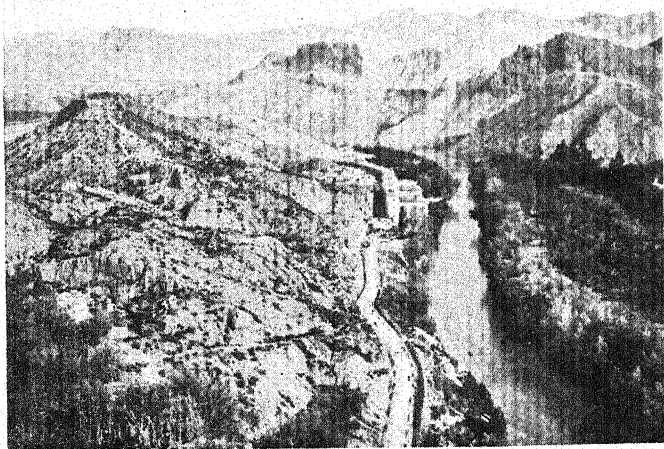
The *huertas* of Valencia are similar to these terraced gardens on the island of Majorca. Two reservoirs are shown clearly, one at the bottom of the picture and the other on the extreme left.

Photo E.N.A.

fertile soils from the mountains and drained by the river Guadalquivir. (The *guadi* of this and other names in Spain is akin to the Arabic *wadi*, meaning a dry river-channel.) Crops include rice, maize, tobacco, cotton, sugar-cane, bananas, dates, figs, vines, almonds, olives, monkey-nuts, oranges, lemons, pomegranates, mulberries, tomatoes, beans, and onions. Notice how many of these are tropical, and foreign even to Southern Europe. Cadiz and Huelva are both ports associated with the broad

SPAIN AND PORTUGAL

opening of the Guadalquivir basin, the latter being an outlet more particularly for Rio Tinto copper. Seville marks the limit of navigation, the lowest bridge-point, and the fortress-site guarding the entrance to the narrower valley above. Cordova is central in the upper



A VIEW ON THE PLATEAU IN MURCIA

The skyline shows the main plateau-structure, while the middle and the foreground illustrate the effects of erosion in what is almost a desert climate. Note the jaggedness of the hill-profiles, the canyon-like valley, and the scanty vegetation. The houses in the centre are obviously too luxurious for their surroundings. Actually the place is a spa with famous sulphur springs, the woods on the right being cultivated grounds belonging to the hotels. See also the view of the Tagus valley at p. 356.

Photo E.N.A.

basin. Granada was a Moorish resort and capital in a cool and sheltered valley among the southern folds: its irrigated gardens, called *vegas*, are watered by the melting snows of the high Sierra Nevada.

Valencia and Murcia. In South-eastern Spain the coastal lowlands are very narrow, mountain-folds and plateau-block presenting steep faces to the sea. Inland, beyond

A GEOGRAPHY OF EUROPE

this barrier, Valencia and Murcia are poor steppe-lands, but the steep descent to the sea has been terraced to form *huertas*, or irrigated gardens of amazing fertility and luxuriance. All the crops produced in Andalusia are grown here; Valencia produces more oranges than California and Florida together, and Valencia almonds



A VERY OLD CORK-OAK

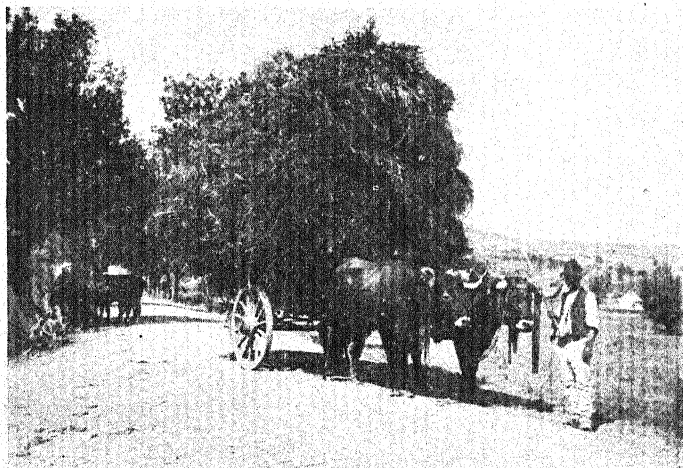
By courtesy of the Portuguese Information Bureau

and raisins are world-famous. The wines of Alicante find a place in wide markets. Towns like Valencia and Murcia are on little rivers which supply drinking water and irrigate the *huertas* in this region of scanty rain.

Catalonia. Barcelona is the largest, busiest, and most industrialized city in Spain, manufacturing cottons, molasses, silks, linen, paper, leather, pottery, machinery (including no-Suiza motors), and soap. The district has no are tro, and the development of hydro-electric power from and Hu, streams is recent and incomplete. Many

SPAIN AND PORTUGAL

factories in the city use imported coal, and small textile mills in the neighbouring countryside still use water-wheels. Some of the manufactures noted can be explained on geographical grounds, but their large-scale development is in the main artificial. No place in Spain has facilities for intense industrialization such as occurs on northern



A PORTUGUESE BULLOCK-CART

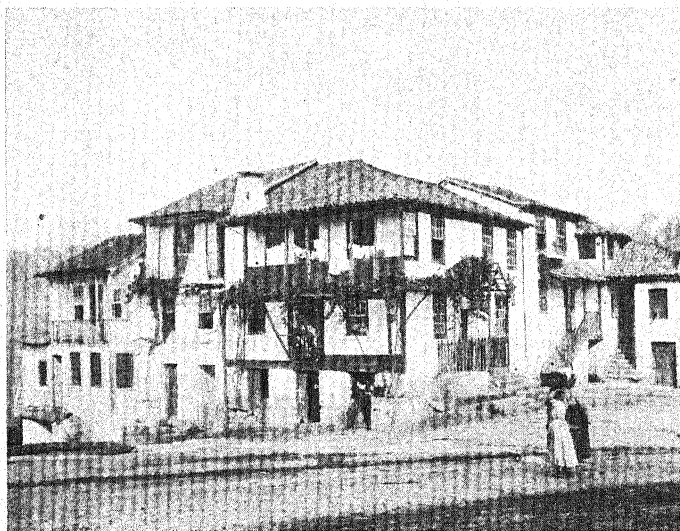
The scene is typical of all Mediterranean lands.

By courtesy of the Portuguese Information Bureau

coalfields; and if, for economic reasons, the country decides to buy factory equipment and produce goods for the home market, then the choice of site is very limited when one considers the import of bulky raw materials and coal, and the distribution of the finished goods. Barcelona has not suffered the same isolation as the rest of Spain. Its northerly position and nearness to the Rhône route have always tended to keep the town more in touch with the rest of Europe, and especially the industrialized north-west. Hence its people have been

A GEOGRAPHY OF EUROPE

more progressive than those of other regions in Iberia. Nevertheless, the artificiality of industrialization in Barcelona is distinctive, and the small, protected home market for factory produce is in direct contrast to the world markets competed for by industrial concerns of Northern



PEASANT HOMES IN PORTUGAL

Houses in the uplands just south of the Lower Tagus valley. Notice the vines, the open windows, and the shady balconies.

By courtesy of the Portuguese Information Bureau

Europe. The interest of Barcelona in the markets of all Spain helps to explain the present political situation in Catalonia. The peasants clamour for complete independence from Madrid, but the factory-workers of Barcelona insist on a united Spain with only some measure of local freedom.

North and North-west: Galicia, Asturias, and the Basque Province. Here is a land of ample rain, of green forests,

SPAIN AND PORTUGAL

of dairy-farms, and of cider. The rias of Galicia are magnificent harbours but without hinterlands; fishing is important, but no great port has arisen on the deep, sheltered bays.

The dense population of the north coast depends for its living mainly on the iron-ore mines. Bilbao, Santander, and Gijon all export ore to Northern Europe. Vessels, instead of returning empty, bring back cargoes of coal and coke, and a considerable amount of smelting is carried on, especially at Bilbao. The quarries, the shipping, and the furnaces are mainly owned or controlled by British firms. Oviedo, behind Gijon, has a small coalfield, and manufactures arms and textiles. San Sebastian is a holiday resort.

Bilbao is the capital of the Basque province, and, as in Catalonia, Galicia, and Andalusia, there is a strong separatist movement.

Portugal. It should not be surprising that at least one of the many diverse regions of Iberia has for long formed a separate country. Spain ends westward approximately where the plateau ends; the limits of navigation on the rivers Douro and Tagus are both at the Portuguese border. Climatically too Portugal is a unit distinct from any other in Iberia; most of the country has a Mediterranean climate, and where this type stops and gives place inland to the extremes of the plateau Portugal stops too. Portugal looks out on to the ocean; but her present colonies are only a poor remnant of a vast overseas empire. To-day little remains of the wealthy Portugal that once was the world's leading nation. The empire grew cumbrous, colonies were exploited rather than settled, sudden wealth led to contented flabbiness, and gradually other nations trespassed, grabbed, and kept their gains. Now Portugal is a poor land, a minor calling-station and outpost at the south-west corner of Europe.

The lowlands of the lower Tagus and Douro are the busy parts of Portugal to-day, busy with the port wine

A GEOGRAPHY OF EUROPE

trade in the north (a business almost wholly in British hands), and with oranges, olives, and cork in the south. The rest of the land is hilly, with much forest. In the valleys the peasants grow maize, beans, and onions; sheep are common everywhere except in the rainier north; pigs feed in the forests; and olives yield their 'butter.' The special forest product here is cork, obtained from the thick bark of the Mediterranean oak. Cork-oaks are carefully nursed; they yield their first cork after twenty years, and their best after forty years. The bark is stripped only every tenth year so that the trees may recover. Most cork is exported 'raw,' to be worked by machinery in other lands, but some corks are cut by hand in Portugal. Cork-dust is used for packing grapes.

Lisbon is the most central town, on the best estuary, and surrounded by the largest plain. As a port the city is more a coaling- and oiling-station than a busy exporter of Portuguese produce. Oporto, the only other large town, deals wholly with the wine trade of the lower Douro.

SOME STATISTICS ABOUT SPAIN AND PORTUGAL

Spain

NUMBER OF FARM ANIMALS IN 1931, IN MILLIONS

Sheep	.	.	.	.	.	20.0
Pigs	.	.	.	.	.	5.1
Goats	.	.	.	.	.	4.6
Cows	.	.	.	.	.	3.6
Asses and mules	.	.	.	.	.	2.2

VALUE OF MINERALS RAISED IN 1933, IN MILLION PESETAS

Coal and Anthracite	.	.	.	24.2
Iron and iron pyrites	.	.	.	69
Lead	.	.	.	22
Copper	.	.	.	14

SPAIN AND PORTUGAL

YIELDS OF PRINCIPAL CROPS IN 1932, IN MILLION CWT.

Wheat (1933)	75
Barley (1933)	43
Grapes	64
Oranges	23
Onions	13
Olives	36
Potatoes	100
Sugar-beet	41

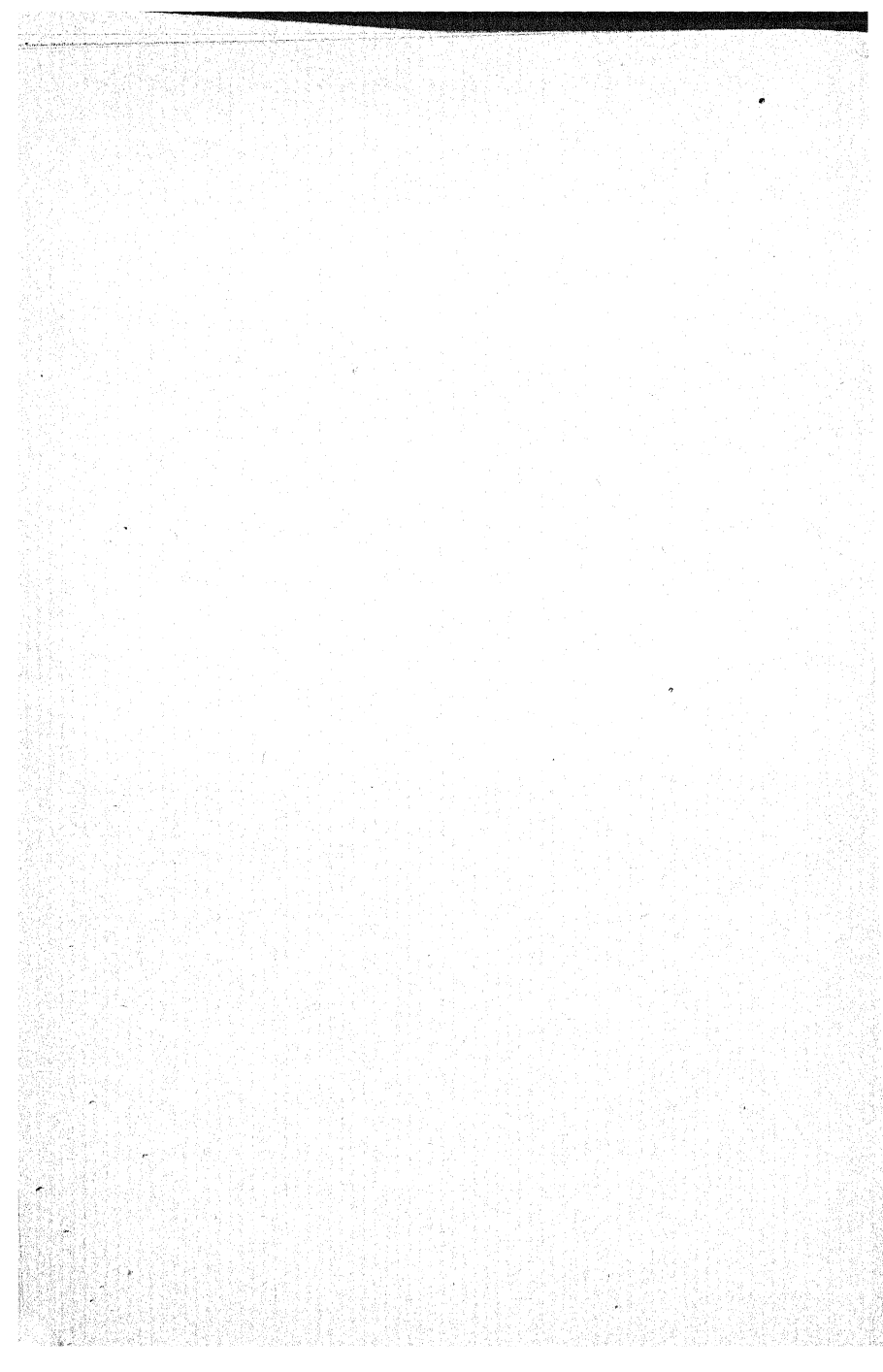
EXPORTS TO THE UNITED KINGDOM IN 1933

Oranges	£3,605,637
Wine	£985,103
Potatoes	£878,898
Almonds	£773,670
Onions	£517,445
Grapes	£488,205
Minerals	£1,238,388

Portugal

CHIEF EXPORTS IN 1933, IN PERCENTAGES OF TOTAL VALUE

Wines	24
Fish	15
Cork	11
Fruit and olive oil	8
Cotton goods (to colonies)	6



APPENDIX

CONNEXIONS BETWEEN CLIMATE AND VEGETATION IN EUROPE

I. RAINFALL AND VEGETATION

No Dry Season (40 in.)

Forest—*e.g.*, Western Europe. Trees need an unfailing water-supply in the subsoil.

Short Dry Season (20 in.¹)

Park-steppe—*e.g.*, Central Russia.

Long Dry Season (10 in.¹)

Grass and scrub—*e.g.*, Southern Russia.

} As the rainfall lessens trees thin out and give place to grasses, which depend only on surface moisture and seed very quickly.

Dry (under 10 in.)

II. TEMPERATURE AND VEGETATION

(A temperature below 45° F. checks tree-growth.)

Growing Season all the Year (never below 45° F.)

Evergreens.

Six Months' Growing Season

Deciduous trees.

Three to Four Months' Growing Season

Coniferous trees.

Less than Three Months' Growing Season

Tundra or ice-desert.

¹ The pine forests have at least 15 in.

A GEOGRAPHY OF EUROPE

III. SEASONS AND VEGETATION

Always Summer—tropical (not in Europe)

Four Distinct Seasons—temperate west-coast climate

Deciduous trees.

Two Seasons

One warm but short, one cold and long (high latitudes).
Coniferous trees.

One wet, one dry (Mediterranean).

Grasses are typical, but drought-resisting trees like olive, cork-oak, etc., are important.

Always Cold—Arctic

No vegetation—warmth is essential.

IV. BOUNDARIES OF THE VEGETATIONAL TYPES

The northern limits of both deciduous and coniferous trees are fixed by length of 'summer'—6 months and 3 months respectively.

The southern limit of deciduous trees is fixed by a season of drought (Mediterranean or steppe).

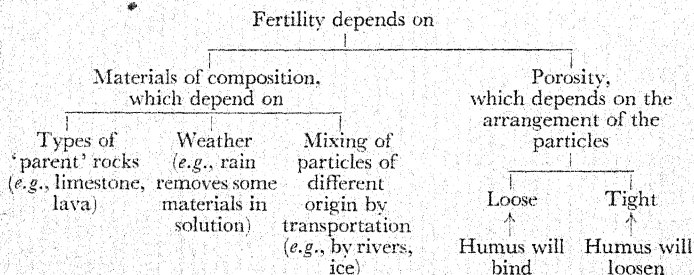
The eastern limit of deciduous trees is fixed by amount of rain—15 inches.

The eastern limit of steppe-land is fixed by amount of rain—10 inches.

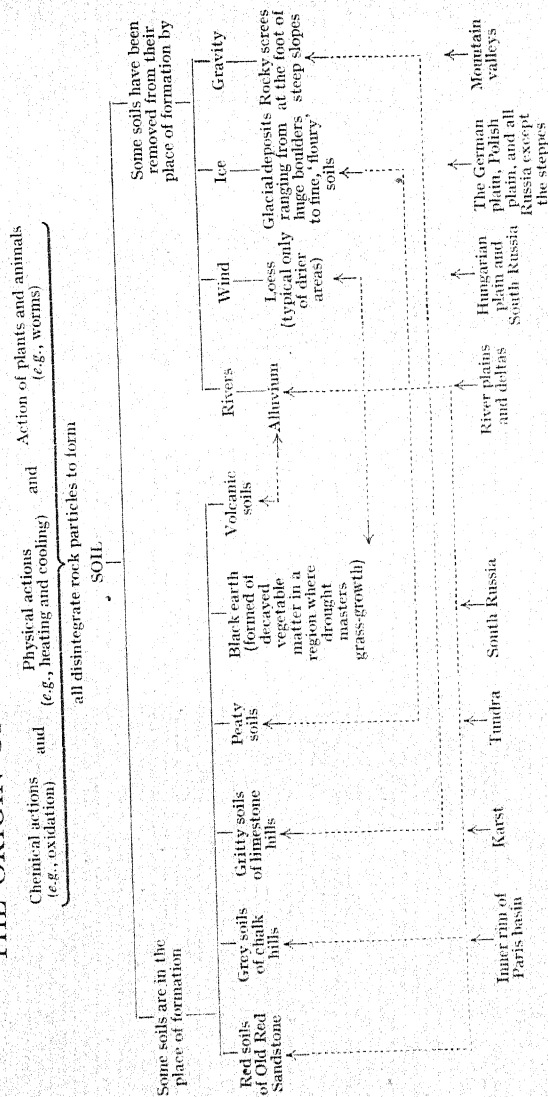
The southern limit of Mediterranean vegetation is fixed by amount of rain—10 inches.

Other factors, especially edaphic (soil), affect vegetation.

THE FERTILITY OF SOILS



THE ORIGIN OF THE MAIN SOIL-TYPES IN EUROPE



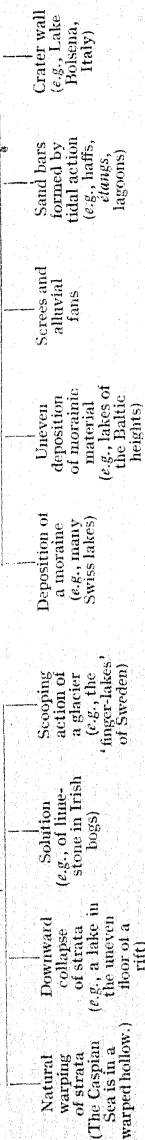
The broken lines with arrows show how various branches of the two main soil-types have necessarily become intermingled.

LAKE-TYPES IN EUROPE

Hollows, in which water collects to form lakes, may be formed in two main ways:

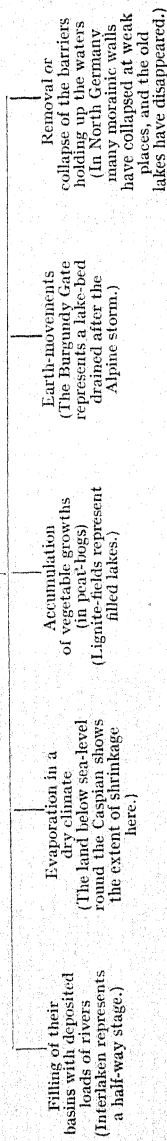
- (a) By removal of the central material or (b) By the building of outer rims or of barriers to a flow of water

This may be accomplished by



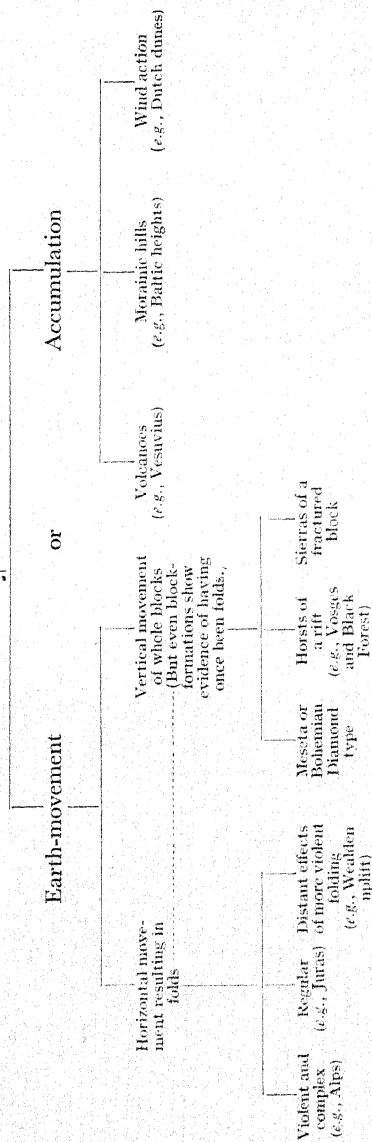
This may be accomplished by

But all lakes are temporary features that will be destroyed by



MOUNTAIN- AND HILL-TYPES IN EUROPE

Mountains or hills have been raised by either



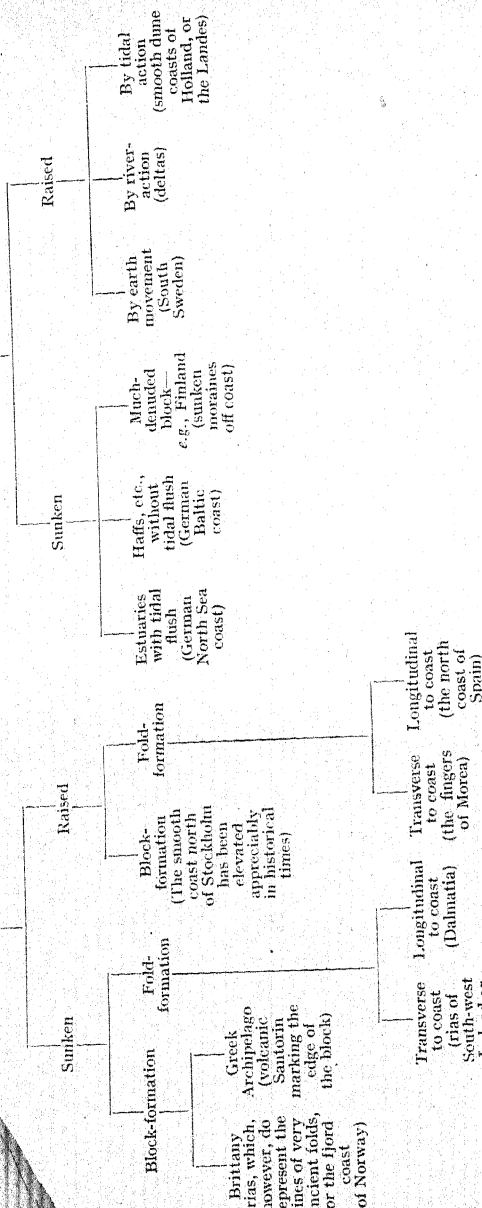
All mountains pass through a life-cycle from youth to old age. Youth is represented in the Apennines, extreme old age in the Russian platform. Many mountain- or hill-types owe their appearance to the destruction of greater mountain-types of which they are only a part—e.g., the chalk and limestone scarps of the Paris basin, or the volcanic plugs of Auvergne. But the process of destruction may be interrupted by intervening earth-movements—e.g., the Pyrenees were a much-denuded mountain-chain before the Alpine storm, which, however, re-elevated them with new Alpine characteristics.

COASTAL TYPES IN EUROPE

and

(b) Lowland coasts

(a) Highland coasts



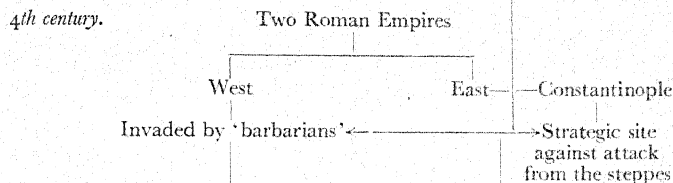
But all coastal types go through a life-cycle; no formation is permanent in shape because the actions of tides, waves, weather, etc., all modify the original outline, the ultimate stage inevitably being smoothness.

APPENDIX

A SUMMARY OF EUROPEAN HISTORY, WITH REFERENCES TO MAJOR EVENTS MENTIONED IN THE TEXT OF THIS BOOK

A.D.

2nd century. Roman Empire at the height of its power, but beyond its borders Germanic tribes and Slavs were beginning migrations under pressure of Mongol invasions.



5th century. Confusion in Western Europe—Attila's raids via the steppes.

6th century. Migration of Slavs between Baltic and Aegean Seas.

7th century. Domination of Danubian Slavs by Mongols.
Beginning of Bulgaria—a Mongol state.
Shrinkage of Eastern Empire of Rome.

Rise of Islam.

8th century. Mohammedan invasions—Constantinople withstands attacks.
Iberia occupied.

9th century. Charlemagne's revival of Western Roman Empire, but by end of century it had broken into four—France, Germany as far as the Elbe, Italy, and Burgundy (the Rhône Corridor).
Norse raids start.

Charlemagne's Empire round Rhine route; Slavs and Mongols along the Danube route.

10th century. Another Roman Empire formed by Germany's conquest of Italy—Holy Roman Empire of German Nation.

Alpine routes.

A GEOGRAPHY OF EUROPE

- 11th century. Turks capture Asia Minor.
Eastern Empire shrinks to Constantinople.
The first crusade against the Turk—*via* the Danube route,
or *via* Italy, Albania, and Salonika.
- 12th century. Crusades. Golden Age of medievalism,
Barbarossa's revival of Charle- Gothic architecture,
magne's empire. universities.
Henry II's empire in France.
- 13th century. Crusades.
- Most of Spain recaptured
from Mohammedans.
Consolidation of France.
- Venetian power.
- Disruption of Germany.
German influence in Italy
ends.
- 14th century. Hansa League.
- Rise of Italian city-states.
- Northern Slav power (Poland).
Southern Slav power (Bulgaria, Serbia, Hungary).
Mongol power in Russia.
- 15th century. Italy the centre of civilization. ←
- France consolidated; Spain consolidated; but Germany dis-
rupted; Switzerland formed.
- 16th century.
- Consolidation of
- Western Europe But Central Europe Eastern Europe
 in confusion Russia
- Rivalry of nationalities
begins—France, Spain
- Age of discovery.
Western outlook.
Decline of Venice.
- Turkish power
at its height
- Beginnings of
Austria-Hungary
(half German, half Slav—
held by military power)
- 17th century. Netherlands freed from Spain—another nation.
Sweden becomes a Great Power—another nation.
- 18th century. Rise of Russia.
Disappearance of Poland (but not of Northern Slavs).
Decline of Sweden, Turkey, and Spain.

APPENDIX

19th century. Belgium, Greece, Serbia, Rumania, Italy, and Germany emerge as nations.

The Industrial Revolution.

The race for overseas empires.

20th century. Rivalry leads to Great War. League of Nations.

Freeing of subject peoples and creation of new states.

Depression after the War: tariffs: fear and distrust continues.

SOME GENERAL STATISTICS

AREAS AND POPULATIONS IN 1932

REGION	AREA, IN 1000 SQUARE MILES	POPULATION, IN MILLIONS
Europe (including U.S.S.R. in Europe only) . . .	4,408	514.7
Africa	11,563	144.3
North and Central America . . .	8,762	172.1
South America	7,003	87.3
Asia	16,173	1,113.1
Oceania	3,300	10.0

WORLD AND EUROPEAN PRODUCTION OF CERTAIN COMMODITIES IN 1933, IN THOUSAND TONS

Rye

World.	50,950
Europe (excluding U.S.S.R.)	25,823
U.S.S.R.	24,190

Wheat

World.	131,180
Europe (excluding U.S.S.R.)	50,273
U.S.S.R.	27,730
North America	22,069
Asia (excluding U.S.S.R.)	12,882
South America	9,505
Oceania	5,019

A GEOGRAPHY OF EUROPE

Barley

World.	40,020
Europe (excluding U.S.S.R.)	18,503
U.S.S.R.	7,850
Asia (excluding U.S.S.R.)	5,237
North America	4,772

Oats

World.	61,000
Europe (excluding U.S.S.R.)	28,347
U.S.S.R.	15,410
North America	15,360

Maize

World.	110,000
North America	59,863
Europe (excluding U.S.S.R.)	16,247

Potatoes

World.	203,850
Europe (excluding U.S.S.R.)	136,534
U.S.S.R.	50,800

Beet Sugar

World.	8,061
Europe (excluding U.S.S.R.)	5,480
U.S.S.R.	996

(Cane sugar: World production, 14,470 thousand tons)

Olive-oil

World.	779
Spain, Portugal, Italy, and Greece	654

Wine

(in thousands of hectolitres)

World.	167,900
Europe	133,870
France	51,766
Italy	33,035

APPENDIX

Flax

World.	678
U.S.S.R.	550
Europe (excluding U.S.S.R.)	123

Hemp

World.	330
U.S.S.R.	154
Europe (including U.S.S.R.)	145

Wool

World.	1,659
Australia and New Zealand	585
South America	266
Europe (excluding U.S.S.R.)	244

Silk (Raw)

World.	54 (exports only)
Japan	42 (exports only)
Italy	3

Artificial Silk

World.	350
Europe (excluding U.S.S.R.)	161
U.S.A.	94
Japan	44
United Kingdom	38
Italy	37
Germany	33
France	25

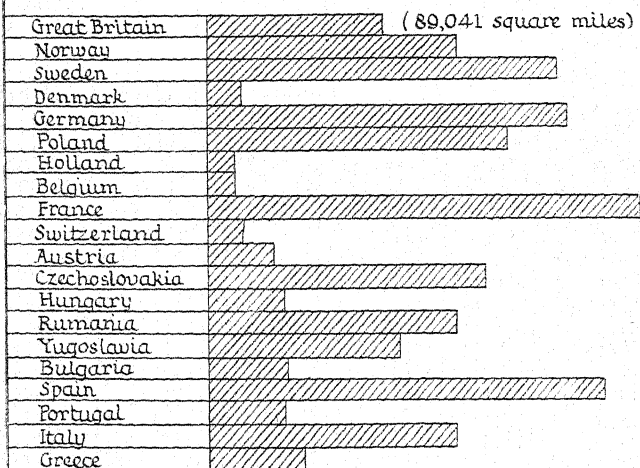
Wood-pulp

World.	16,020
Europe (excluding U.S.S.R.)	8,030
North America	6,842

Copper Ore (Crude)

U.S.A. (1932)	11,176
Chile (1932)	5,041
U.S.S.R. (1932)	1,239

COMPARATIVE AREAS



USES OF THE LAND

Agriculture
 Pasture
 Vineyards
 Forest
 Unproductive

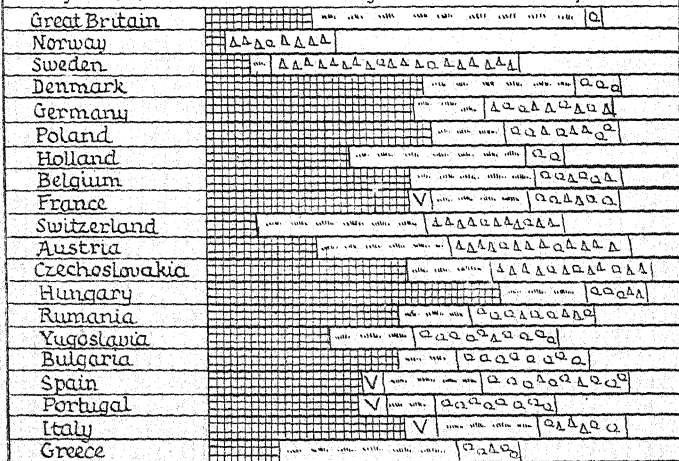
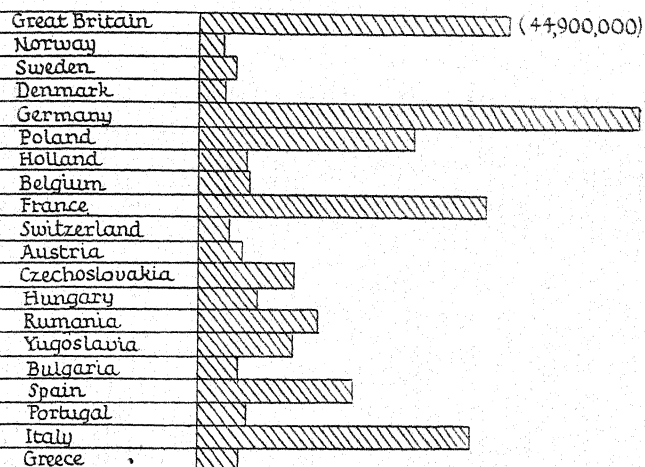


FIG. 26

COMPARATIVE POPULATIONS



OCCUPATIONAL GROUPS

Agricultural
 Industrial
 Other occupations

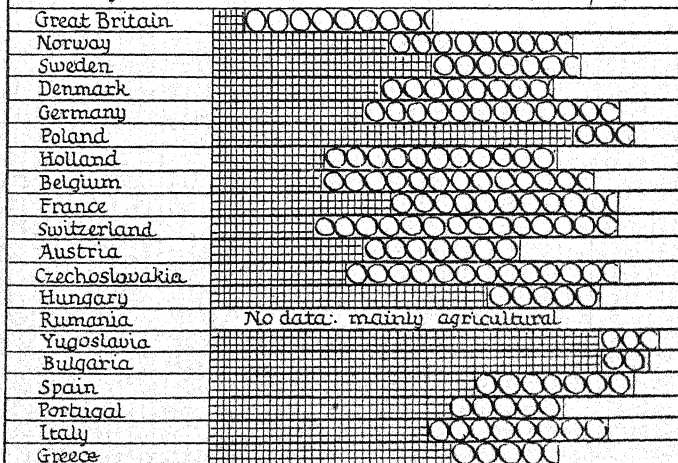


FIG. 27

A GEOGRAPHY OF EUROPE

Bauxite

France	.	.	.	.	.	.	490
U.S.A.	.	.	.	.	.	.	157
Surinam	.	.	.	.	.	.	104
Italy	.	.	.	.	.	.	94
Hungary	.	.	.	.	.	.	72
British Guiana	.	.	.	.	.	.	42

Aluminium (Smelter Production)

World	.	.	.	.	.	.	141
Europe	.	.	.	.	.	.	82
North America	.	.	.	.	.	.	55
(Germany, 18; Norway, 15; France, 14; Italy, 12; United Kingdom, 11; Switzerland, 7.)							

Gold

South Africa, 342 thousand kilograms; U.S.S.R., probably between 77 and 88; North America, 163.

Platinum

U.S.S.R., 2883 kilograms in 1926; South Africa, 283 in 1933; Canada, 1735 (including allied metals) in 1933; Colombia, 1430 in 1933.

Nitrogen

World consumption of nitrogen products, 1753 thousand tons; of which 1624 were synthetic products and 129 Chilean nitrates.

TOTAL TONNAGE OF MERCHANT VESSELS, IN THOUSANDS OF TONS, 1933

Great Britain and Ireland	.	.	.	.	18,701	10 per cent. idle.
U.S.A.	.	.	.	.	13,260	21 " "
Japan	.	.	.	.	4,258	4 " "
Norway	.	.	.	.	4,080	11 " "
Germany	.	.	.	.	3,901	13 " "
France	.	.	.	.	3,512	25 " "
Italy	.	.	.	.	3,150	14 " "
Netherlands	.	.	.	.	2,765	12 " "

APPENDIX

POPULATION OF THE MOST IMPORTANT EUROPEAN TOWNS

According to last Census or Estimate; in Thousands

AUSTRIA

Vienna, 1874
Graz, 153

BELGIUM

Brussels, 891
Antwerp, 279
Ghent, 168
Liège, 165

BULGARIA

Sofia, 288

CZECHOSLOVAKIA

Prague, 848
Brno, 263
Ostrava, 125
Bratislava, 123
Pilsen, 114

DENMARK

Copenhagen, 771

ESTONIA

Tallinn, 136

FINLAND

Helsinki, 268

FRANCE

Paris, 2891
Marseilles, 801
Lyons, 580
Bordeaux, 263
Nice, 219
Lille, 201
Toulouse, 194
Saint-Étienne, 191

FRANCE—continued

Nantes, 187
Strasbourg, 181
Le Havre, 165
Toulon, 133
Rouen, 122
Nancy, 120
Roubaix, 117
Reims, 112
Clermont-Ferrand, 103

GERMANY

Berlin, 4242
Hamburg, 1129
Cologne, 757
Munich, 735
Leipzig, 713
Essen, 654
Dresden, 642
Breslau, 625
Frankfort-on-Main, 556
Dortmund, 541
Düsseldorf, 498
Hanover, 443
Duisburg, 440
Stuttgart, 415
Nürnberg, 410
Wuppertal, 408
Chemnitz, 350
Gelsenkirchen, 332
Bremen, 323
Königsberg, 315
Bochum, 314
Magdeburg, 307
Mannheim, 275
Stettin, 270
Altona, 242
Kiel, 218
Halle, 208

A GEOGRAPHY OF EUROPE

GREECE

Athens, 452
Salonika, 236

HUNGARY

Budapest, 1421
Szeged, 137
Debrecen, 121

ITALY

Rome, 1008
Milan, 992
Naples, 839
Genoa, 608
Turin, 597
Palermo, 389
Florence, 316
Venice, 260
Trieste, 249
Bologna, 246
Catania, 228

LATVIA

Riga, 378

LITHUANIA

Kovno, 103
Memel, 37

NETHERLANDS

Amsterdam, 778
Rotterdam, 588
The Hague, 469
Utrecht, 159
Haarlem, 127

NORWAY

Oslo, 253
Bergen, 98

POLAND

Warsaw, 1179
Lodz, 605
Lwów, 316

POLAND—continued

Poznań, 246
Cracow, 221
Wilno, 196
Katowice, 127

PORTUGAL

Lisbon, 594
Oporto, 232

RUMANIA

Bucharest, 631
Chishinau, 117
Cernautzi, 111
Yassy, 102
Galatz, 101

RUSSIA (in Europe)

Moscow, 3663
Leningrad, 2776
Baku, 709
Kharkov, 654
Kiev, 538
Rostov, 520
Odessa, 497
Gorki, 451
Tiflis, 405
Sverdlovsk, 400
Stalingrad, 388
Dnieprobes, 379
Saratov, 327

SPAIN

Barcelona, 1060
Madrid, 1014
Valencia, 341
Seville, 235
Malaga, 199
Zaragoza, 183
Bilbao, 171

SWEDEN

Stockholm, 521
Göteborg, 523
Malmö, 132

APPENDIX

SWITZERLAND

Zürich, 250
Basel, 148
Geneva, 143
Berne, 112
Lausanne, 76

TURKEY

Istanbul, 691

YUGOSLAVIA

Belgrade, 239

POPULATION OF TOWNS IN OTHER COUNTRIES FOR COMPARISON

GREAT BRITAIN AND IRELAND

Greater London, 8204
Glasgow, 1088
Birmingham, 1002
Liverpool, 855
Manchester, 766
Sheffield, 512
Leeds, 483
Edinburgh, 439
Bristol, 397
Dublin, 316
Hull, 313
Bradford, 298
West Ham, 294
Newcastle, 283

UNITED STATES

New York, 6930
Chicago, 3376
Philadelphia, 1950
Detroit, 1568
Los Angeles, 1238
Cleveland, 900
St Louis, 821
Baltimore, 805
Boston, 781
Pittsburg, 670
San Francisco, 634
Milwaukee, 578
Buffalo, 573
Washington, 487

CANADA

Montreal, 818
Toronto, 631

SOUTH AMERICA

Rio de Janeiro, 1500
Buenos Aires, 2231

CHINA

Peiping (Pekin), 1298
Shanghai, 3259
Hankow, 778
Canton, 861

JAPAN

Tokyo, 4978
Osaka, 2453
Nagoya, 907
Kobe, 787

INDIA

Calcutta, 1485
Bombay, 1161
Madras, 647

EGYPT

Cairo, 1064

AUSTRALIA

Sydney, 1240
Melbourne, 992

A GEOGRAPHY OF EUROPE

RELIGIONS IN EUROPEAN COUNTRIES, IN PERCENTAGES OF POPULATIONS

COUNTRY	PROTESTANT	ROMAN CATHOLIC	GREEK CHURCH	JEWS	MOSLEMS
Austria . .	3.11	93.68	—	2.93	—
Belgium . .	—	The majority (no census taken)	—	—	—
Bulgaria . .	—	83	—	—	14
Czechoslovakia . .	7.5	79	1	2.4	—
Denmark . .	90	—	—	—	—
Estonia . .	83	—	—	—	—
Finland . .	98	—	—	—	—
France . .	2.5	Nearly all	—	—	—
Germany . .	64.1	32.4	—	.9	—
Greece . .	—	—	95	—	—
Hungary . .	27	64.9	—	5.1	—
Italy . .	—	99.6	—	—	—
Latvia . .	56.6	23.7	8.9	—	—
Lithuania . .	9.5	80.5	2.5	7.3	—
Netherlands . .	45	35	—	1.5	—
Norway . .	97	—	—	—	—
Poland . .	2.7	74.9	12.5	9.6	—
Portugal . .	—	Nearly all	—	—	—
Rumania . .	—	6.6	72.4	5.5	5.5
Spain . .	—	Nearly all	—	—	—
Sweden . .	Nearly all	—	—	—	—
Switzerland . .	57	41	—	.4	—
Yugoslavia . .	1.7	37.5	48.7	.5	11.2

INDEX

All the numbers refer to pages. The more important references are in black type. Italic figures denote maps, illustrations, and notes connected with them.

- AACHEN (Aix), 164, 175
 Aalesund, 28
 Aar, river, 152, 184
 Aarhus, 54
 Abbéville, 239
 Abruzzi, 325, 336
 Adelaide, 307
 Adige, river, 341
 Adria, 347
 Adrianople, 265, 269, 299, 332
 Adriatic Sea and coasts: climate, 296, 310; political, 292, 293, 299, 331, 332, 340; structure, 256; Venice, 347
 Aegean Sea and coasts: city-states, 328; climate, 296; Istanbul, 332; political, 293; products, 298, 327; structure, 318, 325
 Aeroplanes, 73, 82, 347
 Air transport, 74, 83, 149, 167, 228, 247, 340
 Aix—*see* Aachen
 Aix-les-Bains, 217
 Albania, 293, 294, 299, 325, **331**, **332**, 376
 Alcohol, 99, 110
 Alderney, 215
 Alexandria, 321
 Alfa-Romeo motors, 346
 Alfalfa, 88
 Algeria, 139, 226, 230, 310, 315
 Algiers, 221
 Alhambra, the, 360
 Alicante, 358
 Alkmaar, 158, 160
 Allier, river, 210, 212
 Alluvium—*see under* Soils
 Almaden, 358
 Almonds—*see under* Fruit
 Alps and Alpine mountains: climate, **192**, 206, 309; folded structure, 122, 151, 153, 174, 181, 183, **184-189**, 201, 206, 215, 216, 251, **253-256**, 257, 262, 272, 284, 295, 317, 318, 373; foreland, 152, 153, 174, 255, 256, 272; human geography, 194, **195-199**. *See also* Bavarian Alps, Bernese Alps, Dinaric Alps, Italian Alps, Transylvanian Alps, Tyrolean Alps
 Alsace, 137, 178, 218, **233-240**
 Altona, 137, 140, 383
 Aluminium: European production, 249; France, 207, 218; Norway, 30, 31; Russia, 80, 86, 90; world production, 382. *See also* Bauxite
 Amager, 54
 Amber, 59, 264
 Amiens, 238, 239
 Ammonia, 138
 Amsterdam: air port, 149; canal to North Sea, 162; historical, 146; manufactures, **161**; ocean port, 148, **162**; population, 384; site, **156**
 Ancona, 338, 348
 Andalusia, 350, 351, 354, **359-361**, 362, 365
 Andermatt, 183, 190
 Angoulême, 229, 230, 232
 Antarctic, the, 28
 Antibes, 227
 Antwerp, 137, 144, 146, 147, **148**, 239, 383
 Apennines: Bochetta Pass, 347; limestone, 334, 336; rivers, 341; routes, 338; structure, **318**, 319, 325, 334, 373

A GEOGRAPHY OF EUROPE

- Appalachian coal, 72
 Apples—*see under* Fruit
 Apricots—*see under* Fruit
 Apulia, 335
 Aquitaine, 206, 219, **228-232**, 345
 Arcachon, 232
 Arcadia, 325
 Archangel, 63, 86
 Arctic Circle, 23, 39
 Arctic Ocean, 24, 28, 62
 Arden, Forest of, 43
 Ardennes, 144: coal, 147, 234;
 human geography, 143; routes
 through, 246; structure, 123,
 153, 163, 206, 215, 219, 232
 Argentina, 32, 70, 146, 159, 250
 Ariège, river, 248
 Arlberg Tunnel, 184
 Armaments, 73, 82, 211, 365
 Armenia, 77, 254
 Armoria, **212-215**; structure, 123,
 163, 206, 229, 233, 234, 241
 Arnhem, 144, 162
 Arno, river, 338, 340
 Arras, 143, 146, 239
 Asbestos, 90
 Asia Minor, 254, 319, 326, 376
 Asti, 343
 Astrakhan, 63, 66, 73, 75, **88, 89**
 Asturias, 364, 365
 Atheism, 96, 261
 Athens, 326, 329, 330, 384
 Atlantic Ocean: climate in Europe,
 22, 37, 208, 213; currents, 23,
 24; Elbe trade, 131; Norwegian
 town-sites, 33, 42; ports, 42,
 148; route, 262; temperature, 320
 Atlas Mountains, 314, 317, 318,
 319, 350
 Attar of roses, 299
 Aube, river, 246
 Aubusson, 210
 Augsburg, 175, 265, 269
 Australia, 32, 70, 148, 379, 385
 Austria, **268-274, 380, 381, 386**;
 buffer state, 253; central site,
 252; structure, 254, 261; towns,
 175, 383; trade, 104, 278, 279,
 301; war losses, 260, 292, 342
 Austria-Hungary, 252, 260, 261,
 281, 347, 376
- Austro-Daimler motors, 270
 Auvergne, 210, 218, 373
 Avalanches, 193, 196, 197
 Aveyron, 228
 Avignon, 220, 229
 Azerbaijan, 77, 79
 Azov, Sea of, 62
- BABYLON, 306
 Bacon—*see under* Pigs
 Bagdad, 264, 333
 Bakony Forest, 274, 279
 Baku, 78, 79, 384
 Balaton, Lake, 274
 Balearic Islands, 318, 350
 Balkan Mountains: forests, 296;
 Shipka Pass, 299; structure, 251,
 254, 256, 294, 318
 Balkan Peninsula, 261, 265, 293,
 310, 317, 324, 325. *See also under*
 separate countries
 Baltic Heights, 105, 108, 372, 373
 Baltic Sea, **59-60**; Copenhagen,
 54; German coast, 105, 113, 117,
 374; political, 85, 86, 95; routes
 and towns, 54, 57, 62, 74, 75, 81,
 88, 116, 264, 375; structure, 20,
 36; tides, 114; trade, 52, 100,
 116, 273
 Baltic states, 18, 21, **54-58**, 113, 117
 Baltimore, 385
 Banat, 261
 Banking, 133, 204
 Barcelona, 216, 354, **362-364**, 384
 Barents Sea, 28
 Barley: Belgium, 145; brewing,
 109, 283; Bulgaria, 298; Czecho-
 slovakia, 283, 285; Denmark,
 53; France, 248; Germany,
 109; Greece, 327; Norway, 26,
 31; pigs and, 109; Rumania,
 289; Russia, 68, 70; Spain, 367;
 Sweden, 39; world production,
 378; Yugoslavia, 297
 Barmen-Elberfeld, 137, 140
 Barrow-in-Furness, 336
 Basalt, 120
 Basel, **204**; canal, 172; popula-
 tion, 385; routes through, 184;
 site, 168, 170, 171, 345; and

INDEX

- Swiss boundary, 181, 183; textiles, 204, 239
- Bashkir Republic, 90
- Basque Provinces, 364, 365
- Basques—*see under* People
- Bata factories, 282
- Batavia, 154
- Batum, 78, 79
- Bauxite, 382
- Bavaria, 171, 176
- Bavarian Alps, 173
- Bayonne, 217, 230
- Beans, 289, 360, 366
- Beer, 54, 161, 177, 283, 286, 298
- Beeswax, 330
- Beet and beet-sugar: Belgium, 145; Central Europe, 269; cultivation, 110; Czechoslovakia, 283, 285; dairying, 99; Denmark, 53; France, 207, 237, 248; Germany, 64, 128; Holland, 158, 160, 161; Poland, 97, 98, 104; Russia, 66, 68, 70, 79, 88; Spain, 367; world production, 378; Yugoslavia, 297
- Belfort, 171, 220, 239, 240
- Belgian Congo, 150
- Belgium, 142-150, 380, 381; coal, 123, 135, 136, 138, 163, 239; coast, 156; farming, 70; flax, 111; heath, 160; historical, 145, 146, 377; industrialization, 202; Malmedy, 164; population, 235, 236, 383; religion, 386; Ruhr, 137; site, 252; trade, 32, 53, 104, 133, 150, 250
- Belgrade: climate, 268; manufactures, 298; Orient Express route through, 265; population, 385; sea-outlets, 293, 299; site, 269, 292, 300
- Bergen, 22, 28, 29, 32, 33, 36, 38, 384
- Berlin, 117-118; Bagdad, 264, 333; central site, 133, 134; climate, 38; hinterland of Hamburg, 116; to London by air, 19; manufactures, 167; to Moscow by air, 19; population, 383; railways, 103, 137, 359; Saxony, 127, 141
- Berne, 181, 183, 184, 190, 204, 385
- Bernese Alps, 183
- Berre, Étang de, 221, 226
- Berry, 245
- Besançon, 220
- Bessarabia, 261, 289, 291
- Betuve, 160
- Beuthen, 127
- Bianchi motors, 346
- Biarritz, 216, 217
- Bienne, Lake, 181
- Bihar Mountains, 287
- Bilbao, 354, 355, 365, 384
- Bingen, 166
- Birmingham, 385
- Bismarck, Prince von, 117
- Black Earth, 66, 67, 68, 76, 88, 371
- Black Forest: Danube and, 251, 257; forests, 175; human geography, 169; structure, 123, 151, 153, 165, 168, 173, 189, 233, 254, 272, 373; toys, 218
- Black Sea: Bulgaria, 293, 299; climate, 37, 69, 78, 296; Danube, 251, 259; oil, 79, 289; pleasure-resorts, 80; Poland, 95; routes to, 59, 62, 74, 75, 80, 81, 103, 264, 332, 333; Rumanian wheat, 267; salinity, 320; structure, 77, 259, 320
- Blanc, Mont, 183, 190, 217
- Block mountains and structure: coast-lines, 374; general, 373; 'middle' site, 120, 122; minerals, 164; relation to coal, 123, 163, 178; relation to folds, 151, 185, 187, 188, 206, 215, 219, 254, 317; sunken areas, 189, 259, 317, 325, 334. *See also under* names of blocks
- Bochetta Pass, 269, 347
- Bochum, 137, 138, 140, 383
- Bohemia (including Bohemian Diamond and Bohemian Plateau), 281-283; coal and lignite, 281; glass, 130, 286; Main, river, 172; people, 260, 261, 285; political, 94; Prague, 286; Roman boundary, 175; Slovakia, 284; structure, 94, 123, 163, 165, 254, 257, 272, 279, 373; trade, 266, 267

A GEOGRAPHY OF EUROPE

- Bohemian Forest, 173, 257
 Bokhara, 81
 Bologna, 338, 346, 348, 384
 Bolsena, Lake, 372
 Bombay, 385
 Bonn, 166
 Boots and shoes, 54, 88, 262
 Bora, 310
 Bordeaux, **230, 231**; compared with Nantes, 232; population, 210, 383; port, 238, 250; routes to, 220, 229, 245, 247
 Bosna, river, 299
 Bosphorus, the, 320, 332
 Boston, 385
 Bothnia, Gulf of, 20, 33, 36, 42
 Boulogne, 149, 238, 239, 247
 Boundaries (frontiers, etc.): Austria, 261, 272; Baltic states, 55, 56, 57, 58; Bulgaria, 292, 293, 299; Caucasus, 63; Czechoslovakia, 261; Danzig, 102; France, 211, 217, 235, 248; Germany, 58, 118, 130, 141, 174, 178, 205, 211; Greece, 324, 325; Holland, 160; Hungary, 274; Italy, 261, 340; Königsberg, 117; Poland, 58, 93-95, 130; Roman Empire, 175; Rumania, 261, 286; Russia, 58, 63; Switzerland, 181, 340; Ukraine, 76; Urals, 61, 63; Yugoslavia, 261, 292, 299
 Bradford, 385
 Braili, 269, 291
 Bratislava, 269, **286, 383**
 Brazil, 250
 Bremen, 22, **115**, 116, 137, 148, 167, 383
 Bremerhaven, 22
 Brenner Pass, 184, 264, 269, 274, 347
 Breslau, 98, 110, 118, 127, **128, 129**, 269, 383
 Brest, 38, 213, 214, 232, 247
 Brest-Litovsk, 103
 Breweries and brewing—see Beer
 Brienz, Lake, 181
 Briey, 240
 Brindisi, 340
 Briquettes, 138
 Bristol, 246, 385
 Britain—see United Kingdom
 British Guiana, 382
 British Isles—see United Kingdom
 Brittany, **213-215**; climate, 245; coast, 350, 374; dairying, 230; people, 205, 218; structure, 123, 163, 206, 229. *See also* Armorica
 Brno, 269, **286, 383**
 Brocades, 224
 Broken Hill, 148
 Brown coal—see Lignite
 Bruges, 145, 146, 239
 Brünn—see Brno
 Brunswick, 118, 127, 131
 Brussels, 146, 147, 148, 149, 167, 239, 383
 Bucharest, 268, 269, 286, 289, 291, 384
 Buckwheat, 109
 Budapest, 278; Danube, 258, 269; industries, 266, 276, 277; population, 384; routes through, 265, 299; site, **279**
 Budweis, 283
 Buenos Aires, 385
 Buffalo, 385
 Buffer states, 96, 149, 253, 273
 Bug, river, 101
 Bukovina, 260
 Bulbs, 152, 158, 160
 Bulgaria, **291-302, 380, 381, 383**, 386; climate, 310; historical, 375, 376; political, 252; wheat, 249
 Burgas, 269, 299, 374
 Burgundy—see under Wine
 Burgundy Gate, 153, 208, 219, 220, 246, 264, 372
 Butter: Baltic states, 57; Czechoslovakia, 283; Denmark, 51, 53; Finland, 56; Germany, 110; Holland, 155, 158; Norway, 26; olive-oil substitute, 297, 312, 313; peasants, 97; Switzerland, 199
 By-products, 70, 82, 88, 92, 131, 133
 Byzantium, 74, 332. *See also* Constantinople, Istanbul
 Bzura, river, 101
 CADIZ, 360
 Caen, 242

INDEX

- Cairo, 385
 Calabria, 325
 Calais, 147, 149, 238, 239, 247
 Calcium carbide, 30
 Calcutta, 61, 385
 California, 307, 362
 Camargue, 226
 Cambrai, 146, 239
 Cambric, 146
 Camel-hair, 88
 Campagna, 325
 Campine, 147
 Canada : aluminium, 249 ; farmers, 276 ; fisheries, 31 ; Five Year Plans and, 64 ; platinum, 382 ; shield formation, 20 ; towns, 385 ; wheat, 52, 70. *See also* North America
 Canadian Pacific Railway, 276
 Canals : Central Europe, 266 ; Corinth, 331 ; Dortmund-Ems, 115, 137 ; Flanders, 237 ; France, 248 ; Göta, 44 ; Hansa, 116, 137 ; Holland, 152 ; Kiel, 54 ; Le Creusot-Loire, 220 ; Lübeck, 117 ; Marseilles-Arles, 221 ; North Sea, 162 ; Panama, 262 ; Paris, 247 ; Rhine-Herne, 140 ; Rhine-Rhône, 171, 220 ; Rhône-Bordeaux (Midi), 221, 229 ; St Lawrence, 276 ; Strasbourg, 172, 240 ; Suez, 221, 231, 262, 323 ; Sulina, 291 ; Vistula, 98
 Canary-breeding, 132
 Cannes, 227, 228
 Cantabrian Mountains, 350, 351, 355, 359
 Canton, 385
 Canyons, 349, 358, 361
 Cape of Good Hope, 321, 323
 Cape Horn, 323
 Cape Town, 307
 Carcassonne, Gate and town, 206, 221, 229, 232
 Carinthia, 274
 Carpathian Mountains : Danube, 251, 318 ; lumbering, 100 ; Moldavia, 287 ; Moravia, 285 ; people, 260 ; petroleum, 288-289 ; Poland, 97, 98, 99 ; political, 94, 101, 174, 274 ; routes, 103, 263 ; salt, 289 ; Silesia, 128 ; snow, 98, 284 ; structure, 254, 262, 279, 284
 Carpets, 146, 161, 298, 314
 Carrara, 336
 Carso, 342
 Carthage, 263, 306
 Caspian Sea, 62, **88, 89** ; Baku, 79 ; Daghestan, 78 ; mountains, 77 ; salt clay, 69 ; structure, 372
 Cassel, 177
 Castile and Castilians, 349, 350, 351, 356, 359
 Catalonia and Catalans, 349, 351, **362-364**, 365
 Catania, 384
 Cattle : Central Europe, 269 ; Danubian countries, 301 ; Denmark, 50, 53 ; France, 207, 210, 230 ; Holland, 152, 158, 159 ; Hungary, 278 ; Mediterranean lands, 297, 311 ; Norway, 26 ; Poland, 99 ; Pyrenees, 217 ; Rumania, 289 ; Russia, 65, 86 ; Silesia, 128 ; Switzerland, 198. *See also* Dairying
 Caucasus, 63, 70, **77-80**
 Causses, 212
 Caviare, 73
 Cenis, Mont, 184, 220, 347
 Central Massif, **208-212** ; Paris Basin, 232, 244, 245 ; people, 214 ; routes through, 219, 229, 246 ; sheep, 230 ; structure, 123, 206, 217, 254, 319
 Cernautzi (Karnasy), 291, 384
 Cetinje, 302
 Cetto—*see* Sète
 Cévennes, 212, 224
 Chalk : Calais-Reims, 143 ; Central Massif, 229, 230 ; Champagne, 240 ; characteristics of chalk country, 235 ; Chilterns, 234 ; Dieppe, 242 ; Downs, 234 ; Loire river, 245 ; London Basin, 234 ; Paris Basin, 153, 163, 165, 207, 233, 246, 371, 373 ; Picardy, 236 ; Rouen, 244 ; sheep, 237, 241 ; soil, 371
 Chambéry, 220
 Chamonix, 217

A GEOGRAPHY OF EUROPE

Champagne, 153, 225, **240, 241**, 245
 Channel Islands, 214, 241
 Charlemagne, 375
 Charleroi, 148
 Cheese : Alkmaar, 160 ; Czechoslovakia, 283 ; Edam, 158 ; Gorgonzola, 343 ; Holland, 152, 155, 158, 160 ; Italy, 348 ; Juras, 218 ; Norway, 26 ; Parmezan, 343 ; peasants and, 97 ; Roquefort, 210 ; Switzerland, 199
 Cheliabinsk, 89, **90**
 Chemicals : Bohemia, 267 ; Cologne, 167 ; Cracow, 130 ; Danish imports, 53 ; Frankfurt, 177 ; French imports, 226, 250 ; Germany, 133 ; Gorki, 82 ; Hamburg, 116 ; Kiev, 73 ; Marseilles, 222 ; Moscow, 73, 82 ; Pilsen, 286 ; Rhine Rift, 171 ; Ruhr, 137 ; Saxony, 127 ; Sète imports, 226 ; Silesia, 131 ; Swedish imports, 44 ; Swiss imports, 200
 Chemnitz, 127, **131**, 141, 383
 Cher, river, 212
 Cherbourg, 243, 247, 250
 Cherries—*see under* Fruit
 Chestnuts—*see under* Fruit
 Chicago, 88, 275, 385
 Chile, 226, 307, 379
 Chiltern Hills, 234, 241
 China (country), 120, 223, 306, 385. *See also* Pottery
 Chishinau, 291, 384
 Chromium, 90, 124
 Cider, 214, 241, 242, 365
Cirques, 106, 216
 Ciscaucasia, 77
 City-states : Athens, 329 ; Danzig, 102 ; Florence, 337, 338 ; Greece, 325, 328, 329, 330, 345 ; Hamburg, 118, 330 ; Italy, 339, 345, 346, 376 ; Rome, 345
 Clay—*see under* Soils
 Clermont-Ferrand, 210, 383
 Cleveland, 385
 Climate : Caucasus, 78 ; Danube Basin, **267, 268**, 272, 275, 289, 296 ; Denmark, 49, 50 ; European Plain, **111-113** ; France, 208, 213, 222, 227, 228, 229, 241 ;

ideal climate, 303-306 ; Mediterranean, **303-317** ; mountain, **190-192** ; Norway, **22-24** ; Rhine Rift, 168, 169 ; Southern Europe, **307-310** ; steppes, 69, 71, 113 ; Sweden, **37-38** ; tundra, 46-47
 Climate figures : Archangel, 63 ; Astrakhan, 63 ; Belgrade, 268 ; Bergen, 32, 38 ; Berlin, 38 ; Brest, 38 ; Bucharest, 268 ; Copenhagen, 38 ; Davos, 190 ; Emden, 111 ; five types in Europe, 306 ; Kazan, 111 ; Leningrad, 38, 63 ; London, 32 ; Milan, 306 (E) ; Moscow, 38, 63 ; Munich, 268 ; Odessa, 63, 306 (C) ; Orenburg, 306 (D) ; Oslo, 32 ; Palermo, 306 (A) ; Paris, 38 ; Sofia, 268 ; Sonnenblick, 268 ; Sundsvall, 42 ; Upsala, 38 ; Valentia, 306 (B) ; Vienna, 268 ; Warsaw, 38, 111
 Clocks and watches, 178, *183*, 199, 200, 203, 204, 217, 218
 Coal and coalfields : Appalachian, 72 ; Austria, 270, 273 ; Central Europe, 269 ; Commentary, 212 ; Le Creusot, 211 ; Czechoslovakia, 281, 282, 286 ; Danish imports, 53 ; Donetz, 65, **72**, 73, 77 ; Dutch exports, 155 ; Dutch imports, 155 ; European production, 138 ; formation, **120-121** ; France, **207**, 239, 247 ; Franco-Belgian coalfield, **142-149**, 153, 211, 234, **238, 239**, 240, 244 ; French imports, 231, 232, 243, 244, 250 ; Gdynia, *102* ; German exports, 180 ; Germany, **140-142** ; Hanover, 177 ; Italian imports, 348 ; industrialization, 124, 126 ; iron industry, **124, 125** ; Italy, 336 ; Ivanovo, 83 ; Kuznetz, **89** ; large-scale manufacture, 83 ; Maastricht, 162 ; mills, **125** ; Pechora river, 86 ; plans in Russia for, 64, 65 ; Polish exports, 100, 103, 104 ; population, 51, 128, 135, 163, 211, 235 ; Rhine traffic, 172 ; Ruhr, 72, **135-140**, 153, 163, 238, 240 ;

INDEX

- Rumania, 288; Saar, 153, 178-180, 238, 240; Saint-Etienne, 211, 220, 239; Saxony, 127, 131-134; Siberia, 74; Silesia, 95, 100, 103, 127, 128-131; site of European coalfields, 120, 121-123; Spain, 362, 363, 365, 366; Spitsbergen, 30; Steyr, 273; Sweden, 43; Switzerland, 201; Tula, 73, 81, 82; Ukraine, 65, 77; Urals, 90; Westphalia—*see* Ruhr; world production, 135, 138
- Coasts, types of, 374
- Coblenz, 166, 175
- Cod—*see* under Fish
- Coffee, 57, 97, 155, 242, 249
- Cognac, 230
- Coke, 30, 53, 89, 124, 138, 172, 365
- Colmar, 169
- Cologne, 167; air-port, 149; historical, 134, 136, 175, 177; manufactures, 137, 140; market-gardens, 163; population, 383; site, 143, 166
- Colombia, 382
- Colonies and colonization: France, 210, 213, 221, 230, 250; ocean highways and, 323, 324; Portugal, 365; Turkey, 332
- Commentry, 212
- Communism, 49, 56, 62, 91, 92, 96
- Como, Lake, 272
- Congo, Belgian, 150
- Constance, Lake, 152, 177, 181
- Constanta, 289, 290, 291
- Constantinople, 332, 333; growth, 322; historical, 353, 375, 376; Norsemen, 74, 76; political, 324. *See also* Byzantium, Istanbul
- Continental shelf, 114, 317
- Co-operation and co-operative production, 49, 50, 51, 65, 68
- Copenhagen, 19, 22, 38, 54, 383
- Copper: Belgian Congo, 150; Belgium, 164; Czechoslovakia, 281; Germany, 137; Norway, 28; Russia, 80, 90; Silesia, 128; Spain, 353, 354, 358, 361, 366; Sweden, 42; world production, 379
- Copra, 221, 323
- Coral, 321, 337
- Cordova, 361
- Corinth, 331
- Cork and cork-oak, 221, 313, 362, 366, 367, 370
- Cornwall, 50, 350
- Corsica, 228, 319
- Cossacks, 66, 67
- Côte d'Or, 220, 223, 232, 234, 245
- Cotentin Peninsula, 215, 241
- Cotswolds, 233, 234
- Cottage crafts: clocks and watches, 199, 204, 217; fancy goods, 337; general, 124, 125; gloves, 97, 128, 132, 133, 178, 210, 217, 281; hosiery, 132; lace, 97, 126, 132, 145, 199, 281; leather, 145, 298; linen, 39, 57, 128, 145, 147, 281; silk, 224; wood, 145, 177, 199; woollens, 128, 131, 244, 281, 298
- Cotton: Belgian imports, 150; French imports, 238, 242, 250; German imports, 115, 131; Greece, 298, 327; Italian imports, 337, 348; Polish imports, 100, 104; in Russia, 66, 78, 79, 83; in Spain, 352, 360; Swiss imports, 172, 202, 203; in Turkistan, 83; in U.S.A., 64
- Cotton, manufacture of: Austria, 270; Belgium, 146, 148, 150; cottage craft, 125; on cotton-fields, 83; Czechoslovakia, 286; France, 146, 218, 240, 243, 244, 250; Germany, 130, 131, 132, 137, 140, 169, 177; Holland, 161, 162; Italy, 337, 347, 348; Moscow, 79; Norway, 44; Poland, 100; Portugal, 367; Spain, 362; Sweden, 44; Tiflis, 79; United Kingdom, 201
- Courtrai, 146
- Cracow: manufactures, 130; population, 384; routes and site, 73, 94, 101, 103, 127, 269; salt, 100
- Crefeld, 137, 140
- Crete, 254, 306, 318, 319
- Creusot, Le, 211, 218, 220
- Crevasses, 106
- Crimea, 62, 77, 80, 254

A GEOGRAPHY OF EUROPE

- Crimean War, 332
 Croats—*see under* Peoples
 Currants—*see under* Fruit
 Currents: Mediterranean, 226,
 320; ocean, 24, 114, 214, 320;
 tidal, 159, 214
 Cutlery, 212
 Cyclones and depressions, 22, 78,
 112, 113, 222, 309
 Czechoslovakia, **279-286, 380, 381**;
 boundaries and position, 94, 130,
 252, 261, 274; communications,
 128; government, 96, 253, 273;
 industrial, 202; people, 260,
 383, 386; products, 249, 266,
 301; trade, 104, 133, 138, 301
 Czechs—*see under* Peoples
 DAGHESTAN, 78
 Dairying and dairy cattle: Austria,
 273; Baltic lands, 22, 56, 57, 58;
 Channel Islands, 214, 215;
 Czechoslovakia, 130; Denmark,
 48-52, 54; France, 207, 217,
 230, 238, 241, 242; Germany,
 110; Holland, 158; Italy, 343;
 Mediterranean lands, 312; Nor-
 way, 26; Poland, 99; relation
 of, to beet, 99, 110; Russia, 66,
 71, 83, 86; Spain, 365; Sweden,
 39; Switzerland, 198, 200, 201
 Dalmatia, 297, 318, 374
 Dannemora, 42
 Danube, river and basin: **251-**
 302; climate and vegetation,
 267, 268; countries, **268-302**;
 in Germany, 172-178; Hamburg
 and, 116; natural region, 18;
 political, 252-253, 259-262;
 routes, **262-267**, 375, 376; struc-
 ture, 153, 173, 174, 182, **253-259**
 Danzig, 22, 95, **101-102**, 116, 330
 Dardanelles, 253, 320, 332, 333
 Dates—*see under* Fruit
 Davos, 183, 190
 Debrecen, 269, 279, 384
 Decazeville, 232
 Dede Agach, 269, 299
 Delage motors, 247
 Delft, 158, 161, 162
 Deltas: coastal type, 374; Danube,
 259, 265, 289, 291; Po, 341, 346,
 347; Rhine, 151, 155, 157, **159**,
 161; Rhône, 206, 226, 341;
 Spanish, 349
 Denmark, **48-54**, 380; dairying,
 39, 68, 158; population, 381,
 383, 386; trade, 32, 44, 45, 52,
 53
Départements, 248
 Deserts: architecture, 314, 315;
 climate, 303, 306, 309; cold, 46,
 195, 369; peoples, 353; in
 Russia, 63, 69, 75, 78, 79, 86,
 87, 88; in Spain, 310, 352, 356,
 361
 Detroit, 385
 Deventer, 161
 Diamonds, 148, 150, 161
 Dieppe, 149, 241, 242, 247
 Dijon, 220, 246
 Dinaric Alps: climate, 296, 331;
 Karst, 342; products, 298;
 structure, 256, 262, 293, 294, 295,
 318, 319, 325, 331
 Dnieper, river, 69, 76, 333
 Dnieprohes, 70, 73, 76, 384
 Dniester, river, 98, 103, 256, 291,
 333
 Dobruja Plateau, 259, 291
 Dolomites, 295, 341
 Don, river, 333
 Donetz, basin and coalfield, 72, 73,
 77
 Dordogne, river, 212, 228, 229
 Dordrecht, 160, 161, 162
 Dortmund, 115, 137, 138, 140, 383
 Dortmund-Ems Canal, 137
 Douai, 148, 238, 239
 Doubs, river, 220
 Douro, river, 350, 359, 365, 366
 Dover, 238
 Downs, North and South, 234
 Drave, river, 251, 256, 259, 272,
 274, 292, 294, 297
 Dresden: climate, 282; coal, 131,
 269; population, 383; products,
 134; relation to Hamburg, 115;
 Saxony, 127, 141; type of town,
 133, 177
 Drin, river, 299
 Drohobycz, 100

INDEX

Drought, 65, 67, 68, 71, 125, 297,
307, 309, 313, 320, 344, 370, 371
Drugs, 138
Drumlins, 106, 174
Dublin, 385
Duisburg, 137, 140, 148, 383
Dunes: Belgian, 142, 144; Danish,
49, 54; Dutch, 154, 155, 156,
157, 158, 162, 373, 374; forma-
tion, 156, 373; Landes, 374
Dunkirk, 147, 149, 238, 239, 247,
250
Durance, river, 220
Durazzo, 293
Düsseldorf, 137, 383
Dvina, river, 76
Dyes, 44, 132, 138, 140, 200, 201,
224

EARTHQUAKES, 318, 334

East Indies, 104, 154
Eau de Cologne, 167 *n.*
Ebro, river, 350, 351, 359
Edam, 158
Edinburgh, 385
Eger, river, 281
Eggs, 51, 52, 221, 279, 311, 313
Egypt, 306, 324, 354, 385
Eifel, 151, 153, 163, 164, 246
Elba, 336
Elbe, river: cottons, 132; dairy-
ing, 110; Hamburg, 61, 114,
117; lignite, 141; Magdeburg,
118; Meissen, 134, 282; politi-
cal, 175, 284, 375; routes *via*, 103,
128, 131, 281; Stettin, 116
Elbeuf, 239
Elche, 358
Electric power: Barcelona, 362;
Czechoslovakia, 281; Finland,
56; France, 211, 217, 218, 220,
239; Italy, 336, 346; Norway,
30, 35; Rhine rift, 169; Russia,
70, 73, 74, 76, 79, 82, 90; Sweden,
43; Switzerland, 183
Embroidery, 201, 218, 298
Emden, 111, 115, 143
Emigration, 195, 210, 217, 348
Emilian Way, 347
Ems, river, 115
Engelberg, 203

England—*see* United Kingdom
English Channel, 234
Enschede, 161, 162
Épinal, 239, 240
Erfurt, 127, 132
Erz Gebirge (Ore Mountains), 131,
281, 283, 285
Eshbjerg, 22, 54
Eskers, 106
Esparto grass, 358
Essen, 134, 137, 138, 140, 177, 383
Est (French railway), 247, 248
Estonia, 21, 54, 56, 57, 383, 386
Étangs, 372
État (French railway), 247, 248
Explosives, 138

FAIRS, 81, 279

Falaise, 241

Falun, 42

Famine, 68, 70, 92, 93

Farming, 380; Brittany, 213; cli-
mate, 304-305; collective, 69, 79,
83, 289; extensive or large-scale,
70, 71, 88, 92, 289; intensive, 70,
107, 108, 156, 214, 298; me-
chanized, 68, 69, 276; mixed,
71, 72, 289; mountain, 25, 26,
194, 197; population engaged in,
103, 201, 247, 280, 381; Saar,
179; South Germany, 174;
steppes, 65, 67, 68, 69, 70, 88, 92;
Switzerland, 183; Viking, 59.
See also Dairying, Flowers, Fruit,
Herding, Little farms, Market-
gardens, Peasants, Sheep, Stud-
farming

Farm-produce: Belgium, 145;
Brittany, 214; Czechoslovakia,
283; Danube lands, 266, 269;
Lower Rhine, 163; North Ger-
many, 109, 110; Poland, 98, 99,
103; Rhône valley, 224; Silesia,
128

Fascism, 21, 49, 96, 116, 273, 338,
339, 340

Fiat motors, 346

Figs—*see under* Fruit

Films and cinema apparatus, 79,
119

Finland, 54-59, 383, 386; dairying,

A GEOGRAPHY OF EUROPE

- 86; minerals, 28; people, 45, 54, 279; political, 21, 54-55; structure, 20, 56, 374; trade, 32, 56
- Finland, Gulf of, 20, 57, 62, 74, 86
- Finmark, 28
- Firm, 106*
- Fish, fisheries, and fishing: anchovies, 157; Baltic Sea, 59; Boulogne, 238; Brittany, 205, 213, 214; Canada, 31; cod, 27, 28, 31; cod-liver oil, 28; dabs, 157; Denmark, 52, 54; Finland, 56; Galicia, 365; Germany, 31, 107, 137; herring, 27, 28, 31, 157, 207; Japan, 31; Korea, 31; mackerel, 27, 207; Mediterranean, 297, 313, 321, 347; North Sea, 107, 137, 144, 157, 161; Norway, 28, 31, 33; oysters, 157, 207, 232; Poland, 97; Portugal, 367; Russia, 64, 73, 86, 88, 89; sardines, 207, 214, 232; sealing, 28, 31; sturgeon, 88; trout, 27; tunny, 207; United Kingdom, 31; U.S.A., 31; Venice, 347; whaling, 28, 31
- Fiume, 261, 269, 272, 274, 293, 299, 340, 347
- Five Year Plans, 61, 64, 71, 92, 93
- Fjords: human geography, 25-27, 33, 48, 154; structure, 21-22, 23, 29, 34, 341, 344, 374
- Flanders, 145, 146, 236, 237, 253
- Flax: Baltic states, 57; Belgium, 141, 145, 146, 239; cottage craft, 125; France, 237, 239; Germany, 110, 128; Holland, 160; Italy, 343; Poland, 97, 98, 100; Russia, 66, 85, 86, 88; Sweden, 39; world production, 379. *See also Linen*
- Flemings—*see under Peoples*
- Floods, 98, 101, 125, 196, 266, 289
- Florence, 337, 338, 384
- Florida, 362
- Flour, 72, 73, 99, 276, 277, 279, 298
- Flowers: Brittany, 214; carnations, 223, 228, 243; Caucasia, 80; daffodils, 243; lavender, 228; Mediterranean, 228, 311, 313; Rhine Rift, 169; Riviera, 80, 228; roses, 80, 223, 298, 299; Saxony, 132; in tundra, 46; violets, 80, 228
- Flushing, 149, 157, 160, 239
- Foehn, 192, 193
- Folds and folded mountains: 66, 184-189, 254, 317-319, 325, 351, 373. *See also names of mountains*
- Folkestone, 238
- Foreland—*see under Alps*
- Forests: Austria, 272, 273; Baltic lands, 22, 57; Belgium, 145; Central Europe, 263, 268, 269; climates, 369, 370; coal, 120; Czechoslovakia, 130, 283; destruction of, 40, 41; European forest areas, 263, 380; Finland, 55, 56; France, 206, 207, 208, 213, 216, 217, 230, 234, 235, 238, 241, 244; Germany, 105, 115, 117, 127, 128, 131, 144, 164, 168, 173, 174, 175; Italy, 342; Lapland, 46; Mediterranean, 312; Norway, 28, 31, 34; Poland, 98, 101, 103, 127, 128; preservation of, 41, 64, 175, 197, 244; products, 28, 31, 35, 40, 43, 273; Russia, 62, 63, 64, 65, 69, 75, 76, 78, 79, 80, 81, 84, 85, 86; Spain and Portugal, 309, 352, 364, 366; Sweden, 36, 38, 39, 40, 41; Transylvania, 288; Yugoslavia and Bulgaria, 296, 297
- France, 205-250, 380, 381, 383, 386; aluminium, 382; artificial silk, 379; coal, 135, 138, 143, 179; eau de Cologne, 167 *n.*; historical, 375, 376; industrialization, 202; iron and steel, 139; Mediterranean climate, 307; political, 136, 137, 148, 149, 179, 182, 253, 324, 333; ports and shipping, 147, 382; structure, 123, 254; textiles, 146; thrift of people, 68; trade, 32, 104, 335; wine, 335, 378
- Franco-Belgian Coalfield—*see under Coal*
- Franconian Juras, 174

INDEX

Frankfort, 133, 177, 269, 383

Frankfort-on-Oder, 118, 127

Freiberg, 127, 131

Friedrichshafen, 177

Friesland, 157

Frisian Islands, 156, 157

Frontiers—*see* Boundaries

Fruit : almonds, 221, 335, 360, 362, 367; apples, 27, 77, 175, 241, 242, 343; apricots, 224; bananas, 360; bilberries, 27; cherries, 27, 77, 175, 224; chestnuts, 200, 210, 217, 224, 228, 230, 335, 343; cranberries, 27; currants, 328, 329, 330; Danish imports, 53; dates, 221, 352, 354, 360; early fruits, 311; figs, 297, 335, 360; Finnish imports, 57; French exports, 250; German trade, 132, 163; grapes, 225, 366, 367; Italian exports, 348; lemons, 228, 313, 335, 348, 360; Massif, 210; melons, 277; oranges, 228, 313, 354, 359, 360, 362, 366, 367; orchards, 27, 76, 170, 173, 175, 223, 238, 241, 242; pineapples, 221; plums, 77, 175, 230, 297, 298; pomegranates, 80, 335, 360; Portuguese exports, 367; prunes, 230; raisins, 362; Russian trade, 80; walnuts, 335, 343.

See also Olives

Furs, 44, 47, 59, 76, 86, 264, 322

GALATA, 332

Galatz, 269, 384

Galicia, 350, 364-365

Garda, Lake, 341, 344, 345

Garonne, river, 212, 228, 229, 248

Gdynia, 22, 102, 103, 127

Geese, 57, 130

Geest, 105, 108, 160

Gellivare, 42

Gelsenkirchen, 137, 138, 140, 383

Geneva, 181, 183, 184, 190, 204, 218, 220, 385

Geneva, Lake, 152, 181, 191, 217

Genoa, 269; hinterland, 338, 347; historical, 263, 322, 323; North Italy, 342; population, 384; routes through, 220, 264, 348

Georgia, 77, 79

Germany, 105-119, 126-142, 163-

180, 380, 381, 382, 383; aluminium, 249, 382; artificial silk, 379; coasts, 374; crops, 26, 27, 64, 68, 249, 266; fisheries, 31; historical, 60, 101, 149, 238, 333, 375-377; industrialization, 97, 202; merchant fleet, 382; North, 162, 284, 372; political, 49, 55, 92, 95, 96, 97, 98, 103, 148, 149, 182, 205, 240, 266, 273, 281, 292, 333; position, 252; religion, 96, 261, 386; routes through, 262; soil, 371; South, 274; structure, 98, 152, 208, 233; trade, 32, 44, 45, 52, 53, 104, 203, 250, 279

Ghent, 146, 148, 239, 383

"Giant, the," 69

Giant Mountains (Riesen Gebirge), 132

Gibraltar, 19, 324

Gibraltar, Strait of, 19, 221, 318, 319, 320, 350

Gijon, 365

Gipsies—*see under* Peoples

Gironde, river, 212, 229, 248

Giurgevo, 289

Glaciers, 106; Austria, 272; Carpathians, 284; Finland, 56; France, 217, 224; Germany, 107, 174, 257; Italy, 341, 343; lakes, 372; Norway, 21, 24, 25, 28, 35; Poland, 98; Pyrenees, 216; Rhine, 165; soil, 98, 105, 371; Switzerland, 174, 195; waterfalls, 28. *See also* Moraines

Gladbach, 137, 140

Glasgow, 385

Glass : Belgium, 148, 150; Bohemia, 130, 282, 286; Cologne, 140, 167; French exports, 250; Halle, 133; Jena, 132; Lorraine, 240; Saar, 179; Saint-Étienne, 211; Silesia, 130; Venice, 347; wine-bottles, 232

Glauchau, 127, 131

Gleiwitz, 100

Glommen, river, 34, 35

Gloves, 286. *See also* Cottage crafts

A GEOGRAPHY OF EUROPE

- Goats, 26, 65, 199, 269, 297, 298, 312, 357, 366
 Gold, 90, 150, 155, 288, 322, 323, 382
 Gorgonzola, 343
 Gorki, 66, 69, 72, 73, 81, 82, 87, 88, 384
 Görlitz, 127
 Göteborg, 22, 44, 384
 Gotha, 127, 132
 Graian Alps, 183
 Gramophones, 82
 Grampians, 36
 Gran Sasso, 325
 Granada, 360, 361
 Granite, 28, 168, 209, 211, 214, 216, 241, 284
 Grapes—*see* under Fruit
 Graphite, 282
 Grasse, 220, 228
 Graz, 269, 273, 274, 383
 Great Britain and Ireland—*see* United Kingdom
 Great St Bernard Pass, 190
 Great War, the: (i) Pre-War, 377; Austria-Hungary, 261, 281; Baltic states, 54, 55, 59; Central Europe, 263; Central Powers, 252; Italy, 346; Kiel, 117; Memel, 58; Rumania, 286; Russia, 68, 72, 78, 81; Serbia, 260; Vienna, 270. (ii) War period: Allies, 253; Baltic states, 55; Belgium, 149, 236; Caen, 243; Central Powers, 253; Dardanelles, 333; Flanders, 236, 237; Marseilles, 221; national rivalry, 377; Picardy, 236; Rumania, 260. (iii) Post-war, 377; boundaries, 95, 261; Central Europe, 260; Constantinople, 333; France, 141; Germany, 137; Greece, 299, 324; Hitler, 117; Italy, 261, 340, 342, 347; Lorraine, 240; Malmcdy, 164; Rumania, 260, 289; Russia, 75, 76; Saar, 240; Silesia, 100, 140; Yugoslavia, 292
 Greece, 324-331, 380, 381, 384, 386; architecture, 314, 315; climate, 310; historical, 263, 306, 377; olive-oil, 378; political, 293, 299; structure, 254, 318, 319; towns, 344, 345, 346
 Greenland, 26, 28
 Grenoble, 217, 220, 239
 Grindelwald, 183
 Groningen, 160, 162
 Grozny, 79
 Guadalquivir, river, 350, 360, 361
 Guernsey, 215
 Gulf Stream, 24

 HAARLEM, 160, 162, 384
 Haffs, 57, 113, 372, 374
 Hagen, 137, 140
 Hague, The, 157, 162, 384
 Halle, 127, 133, 383
 Ham—*see* Pigs
 Hamburg, 22, 115-116, 265, 283-284; city-state, 118, 330; Elbe, 61, 103, 114; holiday resorts near, 117; population, 383; routes to, 103, 137, 264, 265; shipping, 148
 Hamm, 138, 140
 Hammerfest, 28, 33
 Hankow, 385
 Hanover: agriculture, 108, 115, 127; beet, 110; industrial, 115, 177; population, 383; site, 118, 172, 264; trade-depression, 141
 Hansa Canal, 116, 137
 Hansa League, 58, 60, 101, 167, 264, 322, 347, 376
 Hardanger Fjord, 29
 Hardt Mountains, 153, 168, 246
 Harz Mountains, 123, 131, 132, 141, 165, 173, 175
 Haugesund, 28
 Havre, Le, 149, 241, 242, 246, 247, 383
 Hay, 26, 31, 53, 65, 197, 198, 199
 Health-resorts, 78, 80, 164
 Heath: Baltic Lands, 22; Denmark, 49; France, 206, 216; Germany, 108, 115, 117, 144, 145, 164, 174; Holland, 144, 145, 160, 161; Mediterranean, 312; Poland, 99; Spain, 358
 Heidelberg, 177
 Heligoland, 115

INDEX

- Helsinki (Helsingfors), 22, 56, 57, 58, 383
Hemp, 66, 68, 88, 100, 313, 343, 379
Herding and ranching (cattle):
Hungary, 275; Rumania, 289;
Russia, 65, 66, 71, 88
Herne, 137
Herring—*see under* Fish
Hessen, 170
Hides and skins, 44, 47, 88, 155, 199, 200, 210, 221, 250, 266, 283, 289
Himalayas, 254
Hinterlands: Baltic states, 58; Barcelona, 354; Bremen, 115; Dalmatia, 325; Danzig, 102; Emden, 115; Fiume, 347; fjords, 34; Genoa, 338, 347; German ports, 115; Hamburg, 283-284; Holland, 154; Istanbul, 332, 333; Marseilles, 338; Memel, 58; New York, 61; rias, 365; St Petersburg, 85; Sète, 226; Smyrna, 326; Stettin, 116; Trieste, 347
Hispano-Suiza motors, 362
Hohe Tauern, 271, 272
Holland (Netherlands), 152-162, 380, 381, 384, 386; below sea-level, 144; coal, 143; coast, 374; dairying, 50; flax, 111; heath, 108; historical, 376; intensive agriculture, 70, 156; merchant fleet, 382; political, 136, 137, 148, 149; position, 252; Rhine, 18, 151, 163; textiles, 146; trade, 32, 53, 104, 133; windmills, 356
Honey, 108
Honfleur, 243
Hook of Holland, 149, 157, 160
Hops: Bohemia, 283, 284; Central Europe, 269; Kent, 224; Moravia, 285; North France, 237, 239; Rhine Rift, 169, 238
Horses, 65, 66, 76, 101, 108, 241, 269
Horsts, 151, 165, 189, 373
Hosiery, 132, 177, 241
Hotchkiss motors, 247
Houses and homes, 27, 47, 56, 58, 65, 67, 97, 143, 169, 173, 194, 196, 223, 230, 297, 314-316, 337, 344, 358, 360, 364
Hudson Bay, 20
Huelva, 360
Huertas, 360, 362
Hull, 19, 385
Hungary and Hungarian Plain, 274-279, 301, 380, 381, 384, 386; bauxite, 382; Central Europe, 252; historical, 376; political, 253, 261, 266, 273, 280, 292, 297, 298, 347; routes through, 263; soil, 371; structure, 256, 259, 272, 287; wheat, 249
Hunsrück, 151, 153, 163, 178, 246
Hydro-electric power—*see* Electric power
IBERIA, 215, 309, 319, 349, 353, 375.
See also Portugal, Spain
Ice: Archangel, 86; Atlantic, 39; Azov, Sea of, 73; Baltic, 22; Caspian, 73; Danube, 266; Hamburg, 114; Murmansk, 86; Riga, 58; Vistula, 98
Ice Age, 68, 98, 107, 174
Icefield, 24
Iceland, 26, 28, 213
Ijmuiden, 157
Île-de-France, 241
Ill, river, 168, 171, 240
India, 32, 353, 385
Indian Ocean, 148
Industrial areas, industrialization, 120-150; Britain, 158, 202, 324; chief areas, 17; Czechoslovakia, 202, 281, 282; dairying and, 158; Danube trade and, 266; France, 202, 205, 235, 238, 239; Germany, 97, 107, 115, 116, 118, 119, 131-142, 164, 166, 178, 202; Italy, 202; Juras and, 218; markets for timber, 40; Mediterranean culture and, 316; Mediterranean route and, 324; peasants, 97; Poland, 95, 98, 100, 102, 202; population, 381; region, 18; Russia, 69, 72, 73, 81, 87, 90, 91, 97, 202; Spain, 354, 362-364; Switzerland, 201

A GEOGRAPHY OF EUROPE

- Industrial Revolution, 51, 83, 110, 123, 244, 247, 354, 377
- Inn, river: course, 256, 257; mountain climate, 190; relation to Rhine, 182; routes *via*, 184, 274
- Inner Lead, 33
- Innsbruck, 184, 264, 269, 273, 274
- Interlaken, 183, 190, 372
- Ireland, 26, 50, 374
- Iron Gates, 258, 259, 265, 286, 288, 291
- Iron ore: Austria, 273; Belgium, 148; Czechoslovakia, 281, 285; France, 207, 232, 238, 239; Germany, 135, 136, 137, 139, 164, 178; Italy, 336; Luxemburg, 150; Norway, 28; Poland, 100; Rumania, 288; Russia, 72, 73, 80, 89; Silesia, 128; smelting, 124, 125; Spain, 354, 365, 366; Sweden, 42, 43, 45, 46; world production, 139; Yugoslavia, 298
- Iron and steel industries: Austria, 273; Belgium, 150; Czechoslovakia, 286; France, 211, 212, 222, 231, 238, 239, 240, 243, 250; Franco-Belgian coalfield, 147, 148; Holland, 161; necessary conditions, 124, 125; Rhine traffic, 172; Ruhr, 137, 139, 140; Russia, 72, 80, 81, 82, 89; Saar, 179; Sheffield, 43; Solingen, 43; Sweden, 43, 44
- Irrigation, 305, 313, 354, 359, 361, 362
- Isotherms, 37, 38, 39
- Isotta motors, 346
- Istanbul, 19, 171, 265, 269, 299, **332**, **333**, 385. *See also* Byzantium, Constantinople
- Istria, 342
- Itala motors, 346
- Italian Alps, **342**
- Italy, **333-348**, **380**, **381**, 384, 386; aluminium, 249, 382; architecture, 315; climate, 310; historical, 176, 375, 376, 377; industrial, 202; Lake Bolsena, 372; merchant fleet, 382; political, 49, 92, 182, 253, 261, 273, 292, 317, 324, 331; routes through, 220, 221; silk, 379; structure, 181, 318, 319, 325; trade, 138, 203, 223, 226, 250; vines and wine, 224, 249, 378; wheat, 249
- Ivanovo, 73, 82, 83
- JAPAN, 31, 135, 139, 202, 379, 382, 385
- Jena, 127, 132
- Jersey, 215
- Jewellery, 250, 337
- Jews—*see under* Peoples
- Jönköping, 22, 44
- Jugoslavia—*see* Yugoslavia
- Juras and Jurassic folds: clocks and watches, 204; human geography, 198, **218**; relation to Rhône, 219; routes through, 184, 220; structure, 152, 153, 187, 206, 233, 234, 295, 373; Swiss boundary, 182, 183; Swiss lakes, 181
- Jute, 115, 238, 337
- Jutland Peninsula, 54
- KALININ, 73, 82, 88
- Kama, river, 90
- Kaolin, 210
- Karlsbad, 283
- Karlsruhe, 171, 239
- Karst, 294, 325, 342, 371
- Katowice, 100, 127, 384
- Kattegat, 59
- Kattowitz—*see* Katowice
- Kazan, 73, 75, 88, 90, 111
- Kent, 147
- Kharkov, 66, 69, 72, 73, 77, 384
- Kherson, 66, 73
- Kiel, 22, 117, 383
- Kiel Canal, 54
- Kiev, 66, 69, 72, **73**, **76**, 81, 98, 384
- Kiruna, 46
- Kishinev—*see* Chishinau
- Klagenfurt, 269, 274
- Kobe, 385
- Kola Peninsula, 86
- Köln—*see* Cologne
- Königsberg, 22, 116, 383
- Königshütte, 100, 127, 128
- Korea, 31

INDEX

- Kovno, 22, 384
 Kristiansund, 28
 Krivoi Rog, 72, 73
 Krolewska Huta—*see* Konigshütte
 Krupp's, 134, 140
 Kursk, 73
 Kuznetz, 89, 90
- LABRADOR, 26
 Labrador Current, 24
 Lace, 146, 148, 238. *See also under*
Cottage crafts
 Ladoga, Lake, 20, 74
 Lagoons: Albania, 325; Baltic,
 113; Dutch, 157, 161; France,
 214, 226, 232; Italy, 341; lake
 type, 372; Rumania, 291
 Lagosta, 299
 Lahn, river, 123, 140, 151, 163, 166
 Laibach, 302
 Lakes: Baltic lands, 59; Czecho-
 slovakia, 281; deltas, 159; Fin-
 land, 55, 56; Germany, 105,
 174; Hungary, 259; Italy, 341,
 343; Poland, 98; Sweden, 20,
 36, 40; Switzerland, 151, 184,
 190, 200; types, 372
 Lancashire, 202
 Lancia motors, 346
 Landes, the, 217, 231, 374
 Land's End, 214
 Languedoc, 230
 Lapland, 46
 Lapps—*see under* Peoples
 Latium, 325
 Latvia, 21, 54-58, 384, 386
 Laurentian Shield, 20
 Lausanne, 183, 184, 190, 220, 385
 Lead: Czechoslovakia, 281; Mal-
 medy, 164, 178; Ruhr, 137;
 Silesia, 100, 127, 128; Spain,
 354, 358, 366
 League of Nations, 56, 93, 95, 102,
 180, 182, 204, 280, 326, 377
 Leather: Austria, 270; cottage craft,
 145, 298; France, 222, 232; Ger-
 many, 133, 140, 167; Hungary,
 276; Lapps, 47; Mediterranean
 highlands, 314; Poland, 100;
 Rumania, 289; Russia, 73; Spain,
 362; Sweden, 44
- Leeds, 273, 385
 Leghorn, 337, 338
 Leipzig, 133-134; Central Ger-
 many, 141; Hamburg, 115;
 population, 383; products, 132,
 177; site, 118, 127, 131, 269
 Lek, river, 160
 Lemberg—*see* Lwów
 Lemons—*see under* Fruit
 Leningrad, 22, 38, 57, 63, 66, 85-86,
 90, 384
 Lepontine Alps, 183, 190
 Levant, 221
 Leveche, 310
 Levees, 157, 165
 Leyden, 161, 162
 Libau (Liepaja), 22, 58
 Lichens, 195
 Liège, 146, 148, 383
 Liegnitz, 127, 129
 Liepaja (Libau), 58
 Lignite: Czechoslovakia, 281; Ger-
 many, 127, 131, 132, 141, 167;
 Italy, 336; origin, 120-121, 372;
 Russia, 90; workings, 121; world
 production, 138; Yugoslavia,
 298
 Lille, 146, 147, 148, 238, 239, 247,
 383
 Limestone: Alps and folded moun-
 tains, 185, 216, 217, 272, 325,
 333; Belgium, 144; calcium
 carbide, 30; Carpathians, 284;
 characteristics, 208, 209, 218,
 235, 295, 336, 342; Cotswolds,
 234; Dinaric Alps, 294, 331;
 Dolomites, 295; France, 207,
 208, 209, 216, 217, 229, 230, 238;
 Greece, 328; Italy, 333, 334,
 336, 341; Juras, 198, 218, 234;
 Karst, 342; lakes in, 372; origin,
 120; Paris Basin, 153, 163, 164,
 233, 234, 240, 241, 243, 245,
 246, 373; Portland Bill, 241;
 smelting, 124-125; soil, 370,
 371; South Germany, 165, 173,
 174
 Limoges, 210, 212, 213
 Limousin, 229
 Linares, 358
 Linen: Belgium, 146, 148; Czecho-

A GEOGRAPHY OF EUROPE

- slovakia, 281; early trade, 264;
Finland, 57; France, 146, 217,
238; Germany, 128, 129, 130,
131, 177; Holland, 161; Medi-
terranean, 313; Russia, 86;
Spain, 362; Sweden, 39, 44.
See also under Cottage crafts
- Linz, 257, 269, 274
Lipari Islands, 335
Lippe, river, 136, 151, 163, 172
Lisbon, 366, 384
Lithuania, 54-58, 384, 386; his-
torical, 81, 84, 101; political, 21,
93, 94
Little Entente, 253, 266
Little farms: Belgium, 148; Den-
mark, 49, 50; Germany, 108;
Holland, 158, 160; Normandy,
242; old lands, 70; Rumania,
289; Saxony, 132; Silesia, 129;
Switzerland, 194
Little Russia, 76, 77
Liverpool, 385
Locarno, 183, 190
Locomotives, 238
Łódź, 100, 102, 127, 384
Loess: Germany, 105, 107, 108,
128; origin, 68, 371; Rumania,
289; Russia, 68
Lofoten Islands, 28, 33, 37
Loing, river, 246
Loire, river, 212, 213, 220, 228,
229, 230, 232, 245, 246, 250
Lombardy, 343-347; political, 338;
routes to, 182; structure, 189,
272, 318
London: to Berlin, 19; climate,
32; to Copenhagen, 19; to
Istanbul, 19; market for Brittany
produce, 214; market for Medi-
terranean flowers, 228; popula-
tion, 385
London basin, 234, 345
Longwy, 239, 240
Lorraine, 238-240; iron ore, 72,
136, 148, 178, 211; Ruhr and,
136, 137, 164; Saar and, 178
Los Angeles, 385
Lot, river, 212, 228, 248
 Lourdes, 217
Louvain, 146
Lovat, river, 74
Lower Rhine Highlands, 163-167;
coal and, 123; structure, 151
Lübeck, 22, 117, 148
Lucca, 335
Lucerne, 183, 184, 204
Lucerne, Lake, 181, 203
Ludwigshafen, 171
Lugano, 183, 190
Lugano, Lake, 181
Lugansk, 72
Luleå, 42
Lumbering: Austria, 273; Baltic
lands, 22; Belgium, 145; Italy,
342; Poland, 100; Russia, 86;
Sweden, 39-42. *See also* Timber
Lüneburg Heath, 105, 108, 117
Luxemburg, 53, 136, 137, 139, 148,
150, 239
Lwów, 73, 103, 269, 384
Lyons: climate, 307; emigrants
from highlands to, 210, 218;
industrial, 247; population, 383;
routes through, 184, 220; silk,
211, 223, 224, 239; site, 219
Lys, river, 141, 143, 147
- MAAS, river—*see* Meuse
Maastricht, 146, 147, 148, 160, 161,
162
Macaroni, 335, 337
Macedonia, 325
Machinery, 44, 69, 73, 104, 200,
267, 286, 362
Mackerel—*see under* Fish
Madras, 385
Madrid, 309, 355, 359, 364, 384
Magdeburg, 108, 110, 115, 118,
127, 131, 134, 141, 383
Maggiore, Lake, 181
Magnitogorsk, 89, 90, 91, 282
Magyars—*see under* Peoples
Mahogany, 221
Main, river, 151, 153, 172, 174, 175
Mainz, 143, 168, 171, 175, 239, 269,
345
Maize: Central Europe, 266, 269,
301; Danubian countries, 301;
France, 207, 224, 230; Greece,
327; Hungary, 275; Italy,
335, 343; Mediterranean, 313;

INDEX

- Poland, 100; Portugal, 366;
Rumania, 100, 289; Russia,
66, 70, 100; Spain, 360; world
production, 378; Yugoslavia and
Bulgaria, 297, 298
- Majorca, 360
- Malaga, 357, 384
- Malaria, 325, 335, 336, 341
- Malines, 146
- Malm dy, 164, 178
- Malm , 22, 384
- Malta, 324
- Manchester, 385
- Manganese, 72, 73, 80, 124
- Manitoba, 71
- Mannheim, 171, 172, 269, 383
- Mantua, 346
- Maquis, 216
- Marble, 336
- Marburg, 302
- Margarine, 53, 73
- Marienburg, 283
- Maritza, river, 265, 293, 294, 296,
298, 299, 332
- Market-gardens, 66, 137, 163, 207,
214, 237
- Marmora, Sea of, 332
- Marne, river, 171, 246
- Maros, river, 287
- Marseilles, 221-222; climate, 223,
307; historical, 231; immigra-
tion from highlands to, 210;
industrial, 247; olive-oil, 228;
population, 383; port and ship-
ping, 223, 238, 242, 250; routes to,
220, 221; site, 226, 321, 322, 338
- Massif—see Central Massif
- Matches, 40, 44, 286
- Matterhorn, 190
- Mayence—see Mainz
- Meanders, 164, 165, 168
- Mediterranean climate, 303-317;
cyclones, 113; Danube Basin,
267, 268; France, 216, 222, 223;
Portugal, 352, 365; vine, 224;
Yugoslavia and Bulgaria, 296
- Mediterranean Europe: character-
istics, 230; climate, 307-310;
historical, 25, 264; Holland and,
154; human geography, 310-
317; region, 18; routes and
trade, 32, 264; Russia, 80;
structure, 317-319; vine, 225
- Mediterranean Sea and coasts:
climate, 222, 223, 272, 307, 309;
historical, 263, 319-321, 321-
324; olives, 224; routes to,
182, 219, 247, 262, 265, 321-324,
332; structure, 215, 254, 317;
vine, 217
- Mediterranean vegetation, 206, 370
- M doc Peninsula, 230
- Meissen, 134, 282
- Melbourne, 385
- Memel, 22, 56, 57, 58, 93, 384
- Mentone, 227
- Mercedes-Benz motors, 177
- Mercury, 358
- Merinos, 314, 358
- Meseta: climate, 309; mining,
358; sheep, 314; structure, 215,
319, 350, 351, 373
- Mesopotamia, 253, 306, 354
- Messina, 340
- Metals and metal goods, 44, 53, 59,
203, 218, 240, 247, 250, 354. *See*
also Iron and steel industries
- Metz, 143, 239, 246
- Meuse, river, 136, 143, 147, 151,
159, 160, 240, 246
- Mexico, 104
- Mexico, Gulf of, 24
- Michelin works, 210
- Middlesbrough, 125
- Midi, 226, 247, 248
- Milan: population, 384; pro-
ducts, 346; routes through, 184,
264, 348; site, 269, 345
- Milk, 50, 110, 140, 158, 199, 297,
312
- Mill-sites, 110, 125, 127, 128, 131,
147, 164, 170, 240, 244, 363
- Milwaukee, 385
- Minorities, 95, 96, 261, 279, 298
- Minsk, 66, 73, 84, 94
- Mistletoe, 243
- Mistral, 222, 223, 226, 310
- Mohair, 88
- Mohammedans and Mohammed-
danism—see under Religions
- Moldau, river, 281
- Moldavia, 287, 289, 291

A GEOGRAPHY OF EUROPE

- Monaco, 227
 Mongols—*see under* Peoples
 Monkey-nuts, 360
 Mons, 148
 Monsoon climate, 306, 313
 Monte Carlo, 227
 Monte Rosa, 190
 Montpellier, 221, 226
 Montreal, 385
 Montreux, 183, 190
 Moors—*see under* Peoples
 Moraines: Baltic Heights, 373;
 Danube, 257; Finland, 374;
 foreland, 153; France, 206, 224;
 general, 106; Germany, 105,
 107, 108, 127, 144, 174, 257;
 Holland, 158, 160; Italy, 343;
 lakes, 372; loess, 68; Poland,
 98, 99, 101
 Morava, river: people, 260, 292;
 products, 298; routes *via*, 265,
 299, 300, 327; structure, 257
 Moravia, 256, 260, 282, 285, 286
 Moravian Gate, 94, 101, 128, 265,
 271
 Morea, 254, 374
 Morocco, 231
 Morris motors, 210
 Morvan, 211, 245
 Moscow, 66, **80-83**, 384; climate,
 38, 63; coal, 74; dairy-supplies,
 86; historical, 75, 76, 80-81;
 manufactures, 73, 79, 88; poli-
 tical, 85; railways, 62, 90, 103,
 359
 Moselle, river: Coblenz, 166;
 gorge, 123, 143, 151, 163, 167;
 limestone, 240; Metz and Nancy,
 246; vine, 167, 238
 Moslems—*see under* Religions
 Motor industry: Antwerp, 148;
 Barcelona, 362; Berlin, 119;
 exports from France, 250; Gorki,
 73; Liège, 148; Lyons 224;
 Milan, 346; Paris, 247; Prague,
 286; Saint-Étienne, 211; Stutt-
 gart, 177; Turin, 346; Vienna, 270
 Mountain types, 373. *See also* Block
 mountains and structure, Folds
 and folded mountains, Scarps,
 ‘Shield’ formation
 Mouth-organs, 132
 Mulberry, 207, 223, 313, 335, 343,
 360
 Mülhausen, 169, 170, 220, 239,
 240
 Munich (München), 269; climate,
 268; foreland, 152; historical,
 134, 264; industrial, 133, 177,
 266; manufactures, 177; popu-
 lation, 383; routes through, 264,
 265, 274
 Münster, 193
 Murcia, 358, 361, 362
 Murmansk, 86
 Musical boxes, 132, 178
 Musical instruments, 177, 247
 Mussolini, Benito, 346

 NAGOYA, 385
 Namur, 148
 Nancy, 239, 240, 246, 383
 Nantes, **232**, 245, 247, 383
 Naples, 335, **337-338**, 339, 384
 Nappe Theory, 187, 188
 Narvik, 33, 42
 Nazis, 49, 108, 117
 Neckar, river, 151, 171, 172, 173,
 174, 175, 265
Nehrungs, 113, 114
 Netherlands—*see* Holland
 Neuchâtel, Lake, 181
 Neva, river, 74, 85
 New York, 385
 New Zealand, 32, 50, 379
 Newcastle, 385
 Newfoundland, 213
 Newhaven, 239
 Nice, 220, 227, 383
 Nickel, 28, 90, 124
 Nicolayev, 73
 Niemen, river, 57, 58
 Nijni Novgorod (Gorki), 81
 Nîmes, 220, 226
 Nineveh, 306
 Nish, 269, 299
 Nitrates and nitrogen products, 30,
 226, 382
 Nomads, 47, 48, 65, 74, 344
 Nord (province), 240
 Nord (railway), 247, 248
 Norfolk, 311

INDEX

- Normandie*, 231, 232
 Normandy, 215, **241-244**
 Norrköping, 22, 44
 Norsemen—*see under* Peoples
 North America, 32, 71, 72, 91, 120, 227, 277, 377, 378, 379, 382
 North Sea : coast of Germany, 105, 108, 113, 374 ; coast of Holland, 155, 159 ; Copenhagen, 54 ; fishing, 28 ; Norsemen, 25 ; pol-
 ders, 110 ; political, 252 ; route from Black Sea to, 103 ; route from Mediterranean to, 219 ; tides, 114, 159
 Norway, **20-36, 380, 381**, 384, 386 ; aluminium, 249, 382 ; Brittany and, 213 ; climate, **37** ; coast, 374 ; Lapps, 45, 48 ; merchant fleet, 382 ; Switzerland, 195, **197**
 Norwich, 241
 Novgorod, 74, 81
 Nuremberg (Nürnberg), 177, 264, 269, 383
 OASES, 353
 Oats : Belgium, 145 ; Bohemia, 283 ; Denmark, 53 ; Finland, 46 ; France, 230, 237, 248 ; Norway, 26, 31 ; Poland, 104 ; Russia, 68, 70 ; Sweden, 39 ; world production, 378
 Oberhausen, 137, 140
 Odense, 54
 Odenwald, 153, 168
 Oder, river : agriculture, 108 ; dairying, 110 ; lignite, 140 ; routes *via*, 103, 128 ; Stettin, 116 ; woollens, 129
 Odessa, 66 ; climate, 37, 63 ; eleva-
 tor, 69 ; population, 384 ; port, 73, 77, 89 ; routes from, 103 ; trac-
 tors, 73
 Oil (mineral)—*see* Petroleum
 Oil seeds, 155, 249
 Oise, river, 246
 Olives and olive-oil : Albania, 331 ;
 Crimea, 80 ; Dalmatia, 297 ;
 France, 207, 224, 228 ; Greece, 327, 330, 378 ; Italy, 335, 337, 343, 378 ; Mediterranean cli-
 mate, **312, 313**, 370 ; Spain and
 Portugal, 358, 359, 360, 366, 367,
 378 ; world production, 378
 Onega, Lake, 20
 Onions, 214, 360, 366, 367
 Oporto, 366, 384
 Oppeln, 100
 Oranges—*see under* Fruit
 Orchards—*see under* Fruit
 Ore Mountains—*see* Erz Gebirge
 Orel, 73
 Orenburg, 81, 90
 Orient Express, 171, 178, 240, 265,
 299, 333
 Orléanais, 245
 Orléans : railway, 247, 248 ; site
 of town, 229, 245, 246 ; wine,
 230, 245
 Osaka, 385
 Oslo, 22, 32, 34, 36, 384
 Oslofjord, 34, 35
 Osnabrück, 118, 161
 Ostend, 149, 239
 Ostrava, **286**, 383
 Otranto, 340
 Oviedo, 365
 Oysters—*see under* Fish
 PACIFIC OCEAN, 75, 148
 Padua, 346
 Palermo, 310, 340, 384
 Palestine, 253, 315, 324
 Palm-nuts and -oil, 150, 221
 Pamirs, 254
 Panama, 262, 323
 Paper : Barcelona, 362 ; Czecho-
 slovakia, 286 ; Denmark, 53 ;
 esparto grass, 358 ; France, 217,
 232, 247 ; Germany, 130, 133,
 177 ; markets, 40, 53, 155 ; Nor-
 way, 28, 31, 35 ; Russia, 82, 86 ;
 Sweden, 40, 44, 45
 Paris, **245-248**, 383 ; Britany
 produce and, 214 ; climate, 38 ;
 emigrants from Massif to, 210 ;
 perfume, 228 ; products, 119,
 167 ; railways, 137, 171, 220,
 265 ; site, 18, 232, 234, 246 ;
 Vienna, 270
 Paris Basin, **232-245** ; farm-land,
 345 ; Poitou Gate, 229 ; structure,

A GEOGRAPHY OF EUROPE

- 153, 163, 187, 206, 215, 371,
373; wheat, 311
- Parma, 348
- Parmezan, 343
- Passau, 175, 269
- Patio, 375
- Patras, 330
- Pau, 216, 217, 359
- Pauillac, 231
- Pavia, 346
- Peasants, **96-97, 145**; Albania,
331; Belgium, 142, 143; France,
205, 209, 210, 218, 237, 247, 248;
Germany, 108, 128, 174, 176,
177; Greece, 327; Hungary,
276; Italy, 335; Mediterranean,
311, 312, 313, 314; Poland,
98-100, 128, 131; Rumania,
288, 289, 290; Russia, 68, 70,
71, 79, 81, 84, 85, 87, 92;
Spain and Portugal, 364, 366;
Switzerland, 197, 198, 199, 202;
Yugoslavia and Bulgaria, 293,
297
- Peat: Bohemia, 281; Holland,
154; Norway, 27; origin, 120-
121, 372; Russia, 74, 82; soil, 371
- Pechora, river, 86
- Peiping (Pekin), 385
- Pencils, 177, 178, 283
- Pennine Alps, 183, 190
- Peoples: Armenians, 77; Basques,
205, 217, 349; in Belgium, 149;
boundaries and, 95, 260; Bul-
gars, 292; in Caucasia, 77, 79;
Celts, 205; Cossacks, 66, 67;
Croats, 260, 261, 292; Czechs,
75, 91, 95, 260, 279, 286; in
Danube Basin, 252, 260, 261; in
Finland and Baltic states, 48,
54, 55, 60, 279; Flemings, 145,
149; Georgians, 77; gipsies,
279; Gothic races and Goths,
59, 65; in Hungary, 274; Huns,
385; Jews, 98, 261, 279, 386;
Khazars, 65; Kurds, 77; Lapps,
45-48; Letts, 54; Lithuanians,
54, 57, 81; Magyars, 261, 279;
Mongols, 353, 375, 376; Monte-
negrins, 260; Moors—*see* Sara-
cens; Norsemen, 25, 74, 76, 154,
175, 375; Phœnicians, 321;
Poles, 54, 75, 93, 95, 96, 101;
Romans—*see under separate entry*;
in Russia, 75, 91; Ruthenians,
261, 279; Saracens, 195, 354,
359, 361; Scythians, 65; Serbs,
95, 260, 292, 325; in Sile-
sia, 128, 130; Slavs, 54, 75, 91,
95, 96, 101, 118, 175, 252, 260,
265, 279, 292, 353, 375, 376;
Slovaks, 260, 279; Slovenes,
260, 261, 292; Tartars, 66, 67,
75, 76, 81, 88, 175, 252; Teutons,
54, 92, 96, 252, 260, 265; Turks,
77, 252, 261, 265, 300, 326, 332,
376; Vikings, 59, 60, 75, 76, 81,
161, 264, 265; Walloons, 149,
150, 205; Yugoslavs, 75, 292,
298. *See also* Minorities
- Pera, 332
- Perfume, 167, 228, 250, 298
- Perm, 90
- Perpignan, 216, 217
- Persia, 88, 104, 309, 333, 353
- Persian Gulf, 252
- Perth, 307
- Peter the Great, 60, 85
- Petroleum: Dunkirk, 238; Danish
imports, 53; Dutch imports, 155;
French imports, 231, 250; Italian
imports, 348; Marseilles, 222;
Poland, 100, 104; Rumania, 260,
269, 288, 289, 290; Russia, 74,
78, 79, 222; world production,
104
- Peugeot motors, 247
- Philadelphia, 385
- Philippopolis, 265, 269, 299, 302
- Phœnicia, 306
- Piacenza, 347
- Pianos, 82, 119, 133, 134, 177
- Piave, river, 341
- Picardy, 236, 237
- Piedmont, 343
- Pigs: bacon, 51, 57, 99, 109;
barley, 109; Central Europe,
269, 301; Danubian countries,
301; forests, 98, 230, 283,
297, 366; Germany, 109, 110,
175; hams, 109, 175, 283;
Holland, 158; lard, 110; Nor-

INDEX

- mandy, 241; potatoes, 110; sausages, 109, 275, 283; Spain, 366; Yugoslavia and Bulgaria, 297
 Pilsen (Plzen), 269, 281, **286**, 383
 Pindus Mountains, 254, 318, 325
 Piræus, 329
 Pisa, 338
 Pit-props, 40, 217, 231
 Pittsburg, 72, 385
 Platinum, 90, 382
 Platten See, 274
 Plebiscites, 95, 100, 130, 179
 P.L.M. (French railway), 246, 248, 263
 Ploësti, 288
 Plums—*see under* Fruit
 Po, river, 340, 341, 343, 348
 Poitiers, 212, 229, 230
 Poitou Gate, 206, 212, 213, 229, 232, 234, 245
 Pola, 269
 Poland, **93-104**, **380**, **381**, 384, 386; Central Europe, 252; climate, 113; coal, 135, 138; flax, 110; historical, 75, 84, 376; industrial, 202; peasants, 131; political, 56, 58, 130, 141, 260; routes through, 262; soil, 371; structure, 123; trade, 32, 38; wheat, 249
 Polder-land and polders: Germany, 110; Holland, 156, 158, 159, 160, 162; impoldering, 156
 Polenta, 335
 Polish Corridor, **95**, **102**
 Pontresina, 183, 190
 Population: Austria, 270; Belgium, **146**, **147**, 236; chief countries, 381; chief towns, 383-385; coalfields and industrial areas, 18, 51, 100, 126, 178; continents, 377; Czechoslovakia, 285; Danzig, 95, 102; France, 211, 217, 218, 236; Germany, 133, 141, 164; Italy, 343; Northern Plain of Germany, 107, 108; Ruhr, 135, 163; Russia, 65, **69**, 74, 80, 84, 87, 92; Saar, 178; Silesia, 130; Spain and Portugal, **352-355**, 365; Sweden (indus-
 trial), 45; Switzerland, 183, 199; vineyards, 225
 Portland Bill, 241
 Port Said, 19
 Portugal, **365-367**, **380**, **381**, 384, 386; climate, 309; historical, 322, 323, 354; olive-oil, 378
 Posen—*see* Poznan
 Potash, 109, 127, 131, **132**, **133**, 141, 169
 Potatoes: Baltic states, 57; Belgium, 145; by-products, 99; chestnut substitute, 200, 217, 335; Czechoslovakia, 283; Denmark, 53; France, 214, 248; Germany, 26, 110, 128, 169, 170, 172; Holland, 158; Hungary, 278; Ireland, 26; Norway, 26, 31; peasant-crop, 97; Poland, 98, 99, 100, 104; Russia, 85, 86; Spain, 367; Sweden, 39, 53; Switzerland, 198, 200; world production, 378; Yugoslavia and Bulgaria, 297
 Pottery (including china and porcelain): Barcelona, 362; Bohemia, 282; Copenhagen, 54; 'Dresden,' 134, 282; Holland, 152, 158, 161; Limoges, 210; Lorraine, 240; Saar, 179; Stockholm, 44; Tours, 245
 Poultry, 71, 130, 241, 289, 311
 Poznan, 99, 103, 384
 Prague (Prahá), 115, 269, **286**, 383
 Prairie-land and prairies, 64, 65, 68, 72, 88, 263, 275
 Pressburg—*see* Bratislava
 Printing, 132, 133, 177
 Pripet marshes, 84, 94, 99
 Provence, 205
 Prussia, 95, 102, 105, 108, 118, 138
 Pruth, river, 251, 256, 291
 Przemyśl, 269
 Pumice, 335
 Pumpkins, 289
 Punjab, 309
 Pys, 209, 212
 Puzos, 276, 278
 Pyrenees, **216-217**; Alps and, 318; Basques, 205; electric power, 362; rivers, 228; sheep,

A GEOGRAPHY OF EUROPE

- 230, 359; structure, 206, 215,
229, 317, 318, 319, 350, 351, 373;
vines, 224
- Queen Mary*, 232
- RAGUSA, 269, 299
- Railways: Austria, 274; Baltic
states, 58, 59; Canadian Pacific
Railway, 276; France, 212, 214,
216, 246, 248; Germany, 118,
140, 166, 167; Greece, 327;
Norway, 36; Orient Express,
171, 178, 240, 265, 299, 333;
Poland, 94, 103; Ruhr, 137;
Rumania, 291; Russia, 62, 72,
73, 74, 81, 83, 88, 89, 90; Spain,
359; Sweden, 42; Switzerland,
184, 201; Trans-Caspian, 88;
Trans-Siberian, 88, 263; Yugo-
slavia and Bulgaria, 299
- Raisins—*see under* Fruit
- Ranching—*see* Herding
- Raon, 239, 240
- Ratisbon, 175
- Ravenna, 347
- Recklinghausen, 137, 138
- Red Cross Society, 182
- Reims, 143, 241, 383
- Reindeer, 47
- Religions: Caucasia, 79; Cru-
sades, 376; Danube lands, 252,
261; European countries, 386;
Greek Church, 96, 261, 386;
Mediterranean architecture and,
314; Mohammedanism, 261,
353, 375, 376, 386; Protestantism,
96, 261, 386; Roman Catholi-
cism, 96, 149, 261, 386; wars
against Moors, 354, 376; Yugo-
slavia and Bulgaria, 298
- Remiremont, 239
- Remscheid, 137, 140
- Renaissance, the, 343, 346
- Renault motors, 247
- Rennes, 214
- Retting, 141, 147
- Reval—*see* Tallinn
- Rhætian Alps, 183, 190
- Rhine, river, 151-204; cottons,
240; Franco-Belgian coalfield
and, 143; gorge, 123; Hansa
Canal, 116; Holland, 115; Paris
Basin and, 232, 233, 234, 246;
political, 115, 206; regional
unit, 18; routes *via*, 219, 220,
247, 255, 262, 264, 265, 375;
Ruhr coalfield and, 136; struc-
ture, 151, 153, 165, 168-172, 178,
184, 270; vine, 238. *See also*
Lower Rhine Highlands
- Rhine Rift, 219, 220, 233, 235, 238,
247, 345
- Rhodope Mountains, 256, 294, 296,
319, 325
- Rhône, river, 219-224; Burgundy,
375; delta, 226, 341; electric
power, 212, 218; immigration,
218; routes *via*, 184, 206, 208,
229, 255, 262, 263, 264, 265,
363; structure, 151, 181, 182,
256, 270
- Rhône Corridor, 219-226, 229, 256,
262, 263, 264, 265, 363, 375
- Rhône-Rhine Canal, 171
- Rias, 214, 349, 365, 374
- Ribbons, 224
- Rice: Caucasia, 78; Dutch im-
ports, 155; Greece, 327; Lom-
bardy, 269, 343; Maritza, 298;
Spain, 352, 360
- Riesen Gebirge, 132
- Riga, 22, 57, 58, 77, 384
- Riga, Gulf of, 57
- Rimini, 348
- Rio de Janeiro, 385
- Rio Tinto, 358, 361
- Riviera, 226-228; flowers and
fruits, 80, 243; mistral, 223;
North Italy and, 342; route
through, 220, 348
- Rochefort, 232
- Rochelle, La, 229, 232
- Rokino marshes—*see* Pripet marshes
- Romans and Roman influence,
375; Balkans, 265; Bordeaux,
230; Budapest, 279; Constanti-
nople, 332; Danubian lands,
252; Fascism, 338, 339; forts
round Rhine, 175; historical,
375; Mediterranean Sea, 321;
Mohammedans, 353; Nîmes,

INDEX

- 220; Northern Italy, 344; outside Mediterranean, 316; roads, 334; Switzerland, 195
- Rome, **338-339**, 340; architecture, 314, 315; city-state, 330, 345, 346; Constantinople, 353; historical, 263, 306, 330, 334; manufactures, 337; population, 384
- Root-crops, 50, 53, 173
- Rope, 73, 313
- Roquefort, 210, 230
- Rostov, 66, 69, 73, 384
- Rotterdam, 148, 161, 162, 384
- Roubaix, 146, 238, 239, 383
- Rouen, 147, 148, 239, **243-244**, 246, 383
- Rubber: Antwerp, 148; Frankfurt, 177; Hamburg, 116; Marseilles, 221; Moscow, 82; Rotterdam, 161; solvents, 138; synthetic, 73; *via* Mediterranean, 323
- Rugs, 298, 314
- Ruhr, **135-140**; coal, 72, 123, 238, 240; Cologne, 167; French occupation, 100, 131, 141; Hansa Canal and, 116; industrial, 218; iron and steel, 273; Lorraine, 238, 240; market-gardens, 163; Siegerland, 164; trade, 203
- Ruhrort, 137
- Rumania and Rumanian Plain, 256, **286-291**, **380**, **381**, 384, 386; Central Europe, 252; historical, 75, 377; minorities, 261; petroleum, 104, 260; political, 75, 94, 253, 260, 266, 274; statistics, 301; steppes, 100, 263; wheat, 249, 267
- Ruschuk, 269, 302
- Russia, **61-93**; atheism, 261; flax, 111; historical, 57, 65-67, 75, 101, 103, 253, 332, 333, 376; industrialization, 97, 100, 202; petroleum, 289; political, 21, 49, 54, 55, 56, 58, 96, 103, 117, 253, 261, 317, 324, 333; rivers, 320; soil, 371; steppes, 100, 263, 369; structure, 123, 205, 256, 373; trade, 32, 222. *See also* U.S.S.R.
- Ruthenia, 284, 285. *See also unde* Peoples
- Rye: Belgium, 145; Central Europe, 269; Czechoslovakia, 283, 285; Finland, 56; France, 207, 224, 230, 237, 248; Germany, 109, 127, 128, 163, 170; Holland, 157, 158; Norway, 26, 31; Poland, 98, 104; Russia, 66, 85; Spain, 358; Sweden, 39; Switzerland, 200; world production, 377
- SAALE, river, 132, 133
- Saar basin, **178-180**; coal, 138; France, 240; Lorraine, 238; Ruhr, 136, 137, 163
- Saarbrücken, 178, 179, 239
- Saeters, 25, 26, 195, 217
- Sahara, 309, 320
- Saint-Dié, 239, 240
- Saint-Étienne, 211, 212, 220, 239, 383
- St Gall, 183, 184, 204
- St Gotthard: drainage, 182; mountain knot, 181, 254, 262; pass, 264, 340, 347; tunnel, 184, 190
- St Lawrence, river, 213
- St Louis, 385
- St Moritz, 183, 190
- Saint-Nazaire, 231, 232
- St Petersburg (Leningrad), 85, 86
- Saint-Quentin, 239
- Salonika, 253, 293, 299, 324, 326, 327, 376, 384
- Salt: Central Europe, 269; Cracow, 101, 130; Lorraine, 240; Mediterranean France, 226; Mediterranean Sea, 320; Rumania, 289; Saxony, 127; Silesia, 128; Wieliczka, 100, 130
- Salzburg, 175, 269, 274
- Samara, 66, 73, 88, 90
- Samarkand, 81
- Sambre, river, 143, 147, 246
- San Francisco, 385
- San Sebastian, 365
- Sandstone: Carpathians, 284; formation, 120; France, 207; Lorraine, 240; Rhine Basin, 153,

A GEOGRAPHY OF EUROPE

- 163, 165, 168, 174, 233; soil, 371;
Weald, 234
Santander, 365
Santorin, 374
Saône, river, 206, 208, 233, 245,
246. *See also* Rhône Corridor
Saragossa—*see* Zaragoza
Saratov, 73, 88, 384
Sardines—*see under* Fish
Sardinia, 319
Satins, 224
Sauerland, 137
Saumur—*see under* Wine
Savanna climate, 306
Save, river, 251, 256, 259, 274, 294,
297, 299
Saverne Gate, 153, 171, 178, 208,
240, 246, 265
Savoie, 217
Savoyards, 205
Saxony, 131-134; coal, 123, 138;
map, 127; present developments,
141; steel, 140
Scandinavia, 59, 96, 133, 138
Scarps: Berry, 245; chalk, 233,
234, 240; Côte d'Or, 234, 245;
falaise, 241; formation, 373;
limestone, 173, 174, 220, 233,
234, 240; Paris Basin, 153, 233,
234, 373; Rhine Basin, 153, 173,
174, 240; Spain, 358, 360
Scheldt, river, 143, 146, 149, 159,
160
Scheveningen, 157
Schleswig-Holstein, 108, 114
Schneider, motors and works, 211,
220
Scientific instruments, 177, 178
Scilly Isles, 214, 243
Scutari, 331, 332
Sealing, 28, 31
Sebastopol, 73, 80
Seine, river: mouth, 241, 244;
Paris, 246, 247; ports, 250;
routes *via*, 220, 246, 262; scarps,
245
Semmering Pass, 265, 272, 274
Serac, 106
Šerajevo, 298, 302
Serbia, 253, 260, 292, 376, 377
Serbs—*see under* Peoples
Sète, 220, 221, 226, 250, 341
Seville, 315, 359, 361, 384
Shanghai, 385
Shar Dagh, 294
Sheep (and shepherds): Albania,
331; Central Europe, 269, 301;
chalk hills and, 241; Czecho-
slovakia, 285; Danubian coun-
tries, 301; France, 207, 210, 217,
218, 230, 237, 240; Germany,
105, 110, 128, 164, 166, 175;
Holland, 160, 161; Hungary,
278; Italy, 335, 343; limestone
hills and, 235; Mediterranean
climate and, 313-314; Merinos,
314, 358; Norway, 26; Poland,
99; Rumania, 288; Russia, 65;
Spain, 358, 366; Yugoslavia and
Bulgaria, 297
Sheffield, 43, 359, 385
Sherry, 359
'Shield' formation, 20, 21, 23, 28,
34, 36, 37, 42, 56, 57, 122
Shipbuilding and shipyards, 35, 44,
54, 73, 115, 116, 137, 148, 161, 347
Shipka Pass, 299
Siberia, 69, 70, 74, 81, 88, 89, 90,
120
Sicily, 318, 334, 335, 339, 353
Sidon, 263
Sieg, river, 137, 140, 166
Siegen, 137
Sierra Guadarrama, 335
Sierra Morena, 358, 360
Sierra Nevada, 317, 318, 319, 350,
357, 360, 361
Sierras, 350, 359, 373
Silesia and Silesian coalfield, 128-
131; Bohemia, 282; coal, 95,
100, 103, 123, 138; Czecho-
slovakia, 281, 286; Danube
produce, 266; Hamburg, 116;
people, 128, 260; plebiscite, 95;
Saar, 179; steel, 140
Silk: Barcelona, 362; Belgium,
146; China, 223; climate, 313;
cottage craft, 125; Eastern
Mediterranean, 223; France,
211, 212, 217, 218, 223, 239, 250;
Greece, 327; Italy, 203, 223,
335, 337, 343, 346, 348; Maritza,

INDEX

- 298; Mediterranean trade, 264,
323; Ruhr, 137, 140; Russia, 66,
79; Switzerland, 201, 202, 203;
Vienna, 270; world production,
379. *See also* Silk, artificial
- Silk, artificial, 201, 203, 346, 348,
379
- Silver, 281
- Simferopol, 80
- Simplon, pass and tunnel, 184, 190,
191, 220, 347
- Sirocco, 310
- Skagerrak, 20
- Skerry Guard (*skjaergaard*), 33, 34
- Slaves, 59, 230, 232, 264
- Slavs—*see under* Peoples
- Slippers, 132
- Slovakia, 94, 261, 284, 285
- Småland, 36
- Smolensk, 66, 73, 76, 94
- Smyrna, 326
- Soap, 73, 222, 232, 250, 362
- Sofia, 265, 268, 269, 299, 301, 383
- Soils: alluvium and mud, 153, 165,
168, 219, 289, 371; Black Earth,
66, 67, 68, 76, 88, 371; clay, 69,
105, 127, 153, 158, 160, 207, 233,
234, 235, 240, 241, 244, 245, 246;
deforestation and, 41, 197; Den-
mark, 49; fertility, 370; Fin-
land, 56; France, 209, 213, 219,
224, 233, 234, 237, 241; ice and,
56, 98, 105; loess, 68, 105, 107,
108, 128, 289, 371; Lombardy,
343; Lower Rhine Highlands,
164, 166; marly, 330; Moravia,
285; Norway, 25, 26; origin,
371; Rhine Rift, 168; Riviera,
227; sandy, 69, 158; South
Germany, 174; Spain, 360;
steppes, 68; Switzerland, 195;
terraces, 225; vines, 225, 241;
war and, 237
- Solingen, 43, 137, 140
- Somme, river, 236
- Sonnblick, 268
- Sörland, 34
- Sound, The, 54
- Southampton, 242
- South Wales, 231
- Soya beans, 79
- Spa, 144, 164
- Spain, 349–365, 366, 367, 380, 381,
384, 386; architecture, 314–316;
climate, 308, 310; coast, 374;
copper, 379; eau de Cologne,
167 *n.*; historical, 322, 323, 376;
iron ore, 139, 148, 232; Mar-
seilles, 221; olive-oil, 378; poli-
tical, 317; sheep, 314; trade,
250; wheat, 249; wine, 226, 249
- Spalato (Split), 269, 299, 300
- Spas, 130, 164, 210, 283, 285, 361
- Speyer, 175
- Spezia, 347
- Spice trade, 230, 264, 323, 347
- Spires, 175
- Spitsbergen (Svalbard), 28, 30
- Sponges, 321
- Spreewald, 108
- Stalingrad, 69, 73, 88, 384
- Starch, 99, 110
- Stassfurt, 127, 131, 141
- Statistics: (i) Countries: areas, 377,
380; Belgium, 150; Danubian
lands, 301; Denmark, 52–53;
France, 248–250; Germany, 135,
138–140, 180; Holland, 155;
Italy, 348; Norway, 31–32;
occupations, 381; Poland, 104;
population, 377, 381; Portugal,
367; Spain, 366–367; Sweden,
44–45; Switzerland, 200–201;
towns, 383–385; uses of land,
380. (ii) Products: aluminium,
249, 382; artificial silk, 379;
barley, 378; bauxite, 382; beet,
378; coal, 135, 138; copper,
379; fisheries, 31; flax, 379;
gold, 382; hemp, 379; iron ore,
139; iron and steel, 139; lignite,
138; maize, 378; merchant
ships, 382; nitrogen, 382; oats,
378; olive-oil, 378; petroleum,
104; pig-iron, 139; platinum,
382; potash, 133; potatoes,
378; rye, 377; silk, 379;
whaling, 31; wheat, 249, 377;
wine, 249, 378; wood-pulp, 379;
wool, 379
- Stavanger, 28, 33
- Steppe: Bulgaria, 296, 298; climate,

A GEOGRAPHY OF EUROPE

- 65, 113, 296, 311, 369, 370; culture, 329, 344; France, 206; Hungary, 268, 274, 276; invasion route, 75, 101, 263, 353, 375; Rumania, 100, 289; Russia, 63, 64, **65-77**, 79, 83, 87, 88, 89, 92, 106, 113, 311, 371; Spain, 352, 358, 359, 362; treeless, 62, 65; wheat, 58, 311
- Stettin, 22, 116, 148, 383
- Steyr motors, 270, 273
- Stockholm, 22, 43, 44, 374, 384
- Strasbourg (Strassburg): Milan, 345; Orient Express, 265; population, 383; Rhine, 137, 172, 239, 269; Roman, 175; site, 171, 240
- Struma, river, 293, 294
- Stud-farming, 68, 105
- Sturgeon—*see under* Fish
- Stuttgart, 177, 265, 383
- Styria, 274
- Sudetes, 128, 129, 130
- Suez, route, 221, 231, 232, 262, 323
- Sugar: Antwerp, 148; Bordeaux, 230, 231; Budapest, 276; Danish imports, 53; development in Germany, 110; Dutch trade, 155; Finnish imports, 57; French imports, 249; Hamburg, 116; Marseilles, 222; Poland, 99; South Russia, 72, 73, 77; Stockholm, 44; world production, 378; yield from beet in Poland, 104
- Sugar-beet—*see* Beet
- Sugar-cane, 78, 352, 354, 360, 378
- Sulaiman Mountains, 254
- Sulina, 291
- Sulphur, 221, 335
- Sundsvall, 42
- Sunflowers, 68, 70
- Surinam, 382
- Susak, 299
- Svalbard (Spitsbergen), 28, 30
- Sverdlovsk, 90, 384
- Swabia, Upper, 174
- Swabian Juras (Alps), 153, 165, 173, 257
- Sweden, **36-48, 380, 381, 384, 386**; Baltic Shield, 20; coast, 374; Finland, 56; forest, 84; historical, 20, 101, 376; iron, 33, 139, 148; lakes, 372; timber, 232; trade, 32, 53, 104
- Sweets, 134, 140, 167
- Swinemünde, 22
- Switzerland, **181-204, 380, 381, 385, 386**; Alps, 251, 254, 270, 272; aluminium, 249, 382; Austria, 272, 273; Basel, 170; Central Europe, 252; Dinaric Alps, 295; embroidery, 218; Genoa, 347; historical, 376; lakes, 372; Rhine, 152, 172; snow-line, 342; trade, 250
- Sydney, 385
- Szeged, 269, 279, 384
- TAGANROG, 73
- Tagus, river, 350, 356, 359, 365
- Tallinn (Reval), 22, 57, 58, 383
- Tarn, river, 212, 228, 248
- Tarnowitz, 127
- Tartars—*see under* Peoples
- Tatra motors, 286
- Tatra Mountains, 284, 287
- Taunus, 151, 153, 163, 164
- Taurus mountains, 254
- Tea, 313, 323
- Textiles and textile materials, **125-126**; Belgium, 146; Bohemia, 267; Cologne, 167; Copenhagen, 54; Danish imports, 53; Dutch exports, 155; Dutch imports, 155; France, 146, **207, 238, 239, 240, 243**; Holland, 146; Ivanovo, 73; Moors, 354; Norwegian imports, 31; Oslo, 35; Rhine Rift, 169; Ruhr, 137, 140; Saxony, **127, 133**; Silesia, 127, 129; South Germany, 177; Spain, 363, 365; Swedish imports, 44; Swiss exports, 200; Switzerland, **183, 201, 204**; Vikings, 59, 76. *See also* Cotton, Linen, Silk, Woollens
- Theiss, river, 251, 274, 279
- Thiers, 212
- Thrace, 326
- Thun, Lake, 181
- Thuringian Forest, 123, 173

INDEX

- Tiber, river, 338
 Ticino, river, 182, 184, 340
 Tides and tidal currents, 114, 159, 263, 320, 372, 374
 Tiflis, 66, 79, 384
 Tilburg, 161
 Timber: Austria, 273; Bulgaria, 298; cottage craft, 145, 177; Czechoslovakia, 283; Finland, 56, 58; France, 217, 238, 250; Italy, 335; Norway, 27, 28, 31, 35; Poland, 104; Rhine trade, 172; Riga, 58; Russia, 85, 86; Silesia, 130; steppes, 65; Sweden, 40, 44, 45, 232; Switzerland, 199, 200
 Tirana, 331
 Tobacco: Dutch imports, 155; German imports, 115; Rhine trade, 172
 Tobacco-growing: Bulgaria, 298; Czechoslovakia, 263, 285; France, 207, 230; Germany, 136, 169; Greece, 327, 331; Hungary, 275; monsoon lands, 313; Poland, 200; Rumania, 289; Silesia, 128; Spain, 360; Yugoslavia, 297, 298
 Tobacco-manufacture: Amsterdam, 161; Antwerp, 148; Budapest, 276; Dresden, 134; Hamburg, 116; Rotterdam, 161; Russia, 72, 73
 Tokay, 269, 279
 Tokyo, 385
 Toledo, 359
 Tomatoes, 214, 243, 335, 337, 360
 Tomsk, 89
 Toronto, 385
 Tortoise-shell, 337
 Toul, 239, 246
 Toulon, 220, 226, 347, 383
 Toulouse, 216, 221, 229, 230, 232, 247, 383
 Touraine, 245
 Tourcoing, 146, 238, 239
 Tourists: Austria, 273; Crimea, 80; France, 209, 213, 217; Italy, 337, 338, 342, 347; Norway, 30, 48; Rhine, 164; Silesia, 130; Switzerland, 183, 203, 204
 Tournai, 146
 Tours, 229, 245
 Town-sites, **32-33**
 Toys, 132, 177, 178, 218, 282, 283
 Tractors, 67, 70, 73, 82, 86, 88
 Trade—see *Statistics and under separate countries*
 Trade winds, 308
 Trans-Caspian railway, 88
 Trans-Siberian railway, 88, 263
 Transcaucasia, 77, 79
 Transylvania, 260, 287, 288
 Transylvanian Alps, 258, 274, 286, 287, 291
 Trentino, 253, 261, 342
 Trèves, 175
 Trieste, 269; political, 261, 293, 340, 347; population 384; routes to, 272, 274, 299, 348
 Tromsø, 28, 33
 Trondheim, 34, 35, 36
 Troppau, 130
 Troyes, 241
 Tsaritsin—see *Stalingrad*
 Tuapse, 79
 Tula, **73, 81, 82**
 Tundra, 46, 63, 86, 369, 371
 Tungsten, 124
 Tunis, 139
 Turin, 184, 220, 345, 346, 348, 384
 Turkestan, 83
 Turkey, **332**; historical, 376; political, 252, 253, 326; population of Istanbul, 385; site, 294. *See also Istanbul and under Peoples (Turks)*
 Turnips, 27, 39
 Tuscany, 325, 335, 338
 Tver (Kalinin), 73, 87
 Tyre, 263
 Tyrol, 268, 272, 295
 Tyrolean Alps, 272
 Tyrrhenian Sea, 189, 318, 325, 334
 Ufa, 90
 Ukraine, 76, 289
 Ulm, 265, 269
 Umbrail Pass, 193
 United Kingdom: aluminium, 249, 382; architecture, 316; area, 380; artificial silk, 379; Belgian

A GEOGRAPHY OF EUROPE

- trade, 150; Channel Islands, 214; climate, 37; coal, 51, 64, 120, 135, 138, 232, 243; Danish trade, 52, 53; farming, 68; fisheries, 31; forests, 38; French trade, 226, 250; German trade, 133; Great War and, 149, 253, 333; immigrants from Brittany, 214; industrialization, 158, 202, 244, 324; iron ore, iron, and steel, 139; merchant fleet, 382; Norwegian trade, 32; occupations, 381; Phœnicians, 321; planned economy, 92; Polish trade, 104; population, 51, 387, 385; Russian trade, 70; Swedish trade, 44, 45; Swiss trade, 201; trade crisis, 52, 280; uses of land, 380
- United States: aluminium, 249; artificial silk, 379; bauxite, 382; chemicals, 226; coal, 135; copper, 379; cotton, 64, 146; Czechoslovakia, 280; farmers, 276; fisheries, 31; Great War and, 253; iron, iron ore, and steel, 139; merchant fleet, 382; petroleum, 79, 104, 289; planned economy, 64, 92; towns, 385; trade, 44, 45, 53, 104, 250; wheat, 70
- Upsala, 22, 38
- Ural Mountains, 61, 63, 74, **89-90**
- Uskub, 302
- U.S.S.R.: atheism, 96; barley, 378; beet, 378; coal, 135; communications, 74, 83; films, 79; flax, 379; gold, 288, 382; hemp, 379; iron, iron ore, and steel, 139; Magnitogorsk, 89; Moscow, 81, 85; oats, 378; petroleum, 104; platinum, 382; population, 65, 69; potatoes, 378; rye, 377; territory, 61, 86, 94; towns, 384; trade, 53, 70; wheat, 70, 377
- Utrecht, 144, 161, 162, 384
- VAAL, river, 160
- Val d'Aosta, 181
- Val Tellina, 181
- Valencia, 354, 360, **361-362**, 384
- Valenciennes, 146, 147, 238, 239
- Valladolid, 359
- Valona, 293
- Väner, Lake, 36
- Vardar, river: course, 294; routes *via*, 265, 299, 300, 327; Salonika, 293, 327; Serbia, 260, 292
- Varna, 269, 299, 374
- Vätter, Lake, 36
- Vegas, 361
- Vegetables: Brittany, 214; Dutch exports, 158, 160; French exports, 250; Italian exports, 348; Mediterranean, 311, 313; Moscow, 83; Nantes, 237; Rhine Rift, 169; Ruhr, 140, 163; vegetable butter, 313; Yugoslavia and Bulgaria, 297
- Vegetation: altitude and, **194-195**; climate and, **369-370**; cool lands, 307; Danube basin, 268; Mediterranean, 206, **227-228**, 370; Russia, 63, 86; Spanish plateau, 367; Sweden, 30-37
- Veluwe, 160
- Velvet, 140, 224, 238
- Vendée, 213, 215, 229, 230
- Venezuela, 104
- Venice, 269; Basel, 345; Bruges, 146; historical, **322-323**, **347**, 376; manufactures, 347; Mediterranean trade, 263; population, 384; routes to, 264, 265, 274, 348; Spreewald, 108; Stockholm, 44
- Ventspils (Windau), 58
- Verdun, 143, 246
- Verona, 184, 269, 274, 346, 348
- Veronezh, 73
- Versailles, Treaty of, 179, 284
- Vesuvius, 334, 338, 373
- Vevey, 183
- Vichy, 210, 212
- Vienna, **270**; climate, 268; Danube, 257, 259, 269; political, 261, **270**, 272, 273; population, 383; products, 167, 266, **270**; Roman, 175; routes through, 171, 264, 265, 274, 299
- Vikings—*see under* Peoples

INDEX

- Vilna, 22, 56, 93, 384
 Vines and vineyards, **224-226**, 380;
 Central Europe, 269; Crimea,
 62, 80; currant-vine, 328;
 Czechoslovakia, 285; Dalmatia,
 297; France, 167, **207**, 217, 223,
 230, 238, 241, 245; Germany,
 166, 167, 169, 170, 173, 175, 238;
 Greece, 327, 328; Italy, 335,
 343; Mediterranean climate,
 313; Moselle, 167, 238; Rhine
 gorge, 166, 167; Rhine Rift,
 169, 238; Spain, 358, 359, 360;
 Switzerland, 193, 198, 200; ter-
 races, 166, 223, 225, 238, 362;
 Yugoslavia and Bulgaria, 297.
See also Wine
 Violins, 132, 178
 Vistula, river, 94, 98, 101, 103, 116,
 129, 256
 Vltava, river, 286
 Voisin motors, 247
 Volcanoes, volcanic areas, and rocks:
 Ardennes, 144; Auvergne, 373;
 crater lakes, 174, 372; France,
 206, 209, 242, 213; hot springs,
 164; Italy, 334; lava, 209, 370;
 Lower Rhine Highlands, 163,
 164; Mediterranean, 318, 321,
 325; *pays*, 212; Santorin, 374;
 soil, 370, 371; South Germany,
 174; Vesuvius, 334; volcanoes,
 212, 213, 318, 321, 325, 373;
 Vosges and Black Forest, 189;
 Weserberg-land, 153, 163
 Volga, river, 70, **86-89**, 333
 Volkov, river, 74
 Voronezh, 69, 73
 Vosges: block structure 123 189,
 206, 215, 232, 254, 272; cottons,
 240; horst, 151, 165, 373; old
 rocks, 153, 165, 173; Paris Basin,
 215, 219, 233, 246; pine forests,
 238; Rift, 168, 189; Saverne
 Gate, 171
 WALLACHIA, 286, 287, 289
 Walloons—*see under* Peoples
 Warsaw, 38, 62, 73, 97, 98, 99, **100**,
 101, 103, 111, 127, 384
 Washington, 385
 Watches—*see* Clocks and watches
 Waterfalls, 24, 25, 28, 34, 40, 240
 Weald, 43, 173, 187, 373
 Weimar, 127, 132
 Wener (Väner), Lake, 36
 Weser, river, 115, 116, 137, 163,
 172, 174
 Weserberg-land, 153, 165, 172, 175,
 177
 West Ham, 385
 West Wind Drift, 24
 Westerwald, 151, 153, 163, 165
 Westphalia, **135-140**. *See also* Ruhr
 Wetter (Vätter), Lake, 36
 Whaling, 28, 31
 Wheat: Canada, 52; Central
 Europe, 269, 301; climate, 311;
 Czechoslovakia, 283, 285; Dan-
 ube trade, 266; Danubian
 countries, 301; Denmark, 51,
 53; European production, 249;
 France, 207, 210, 224, 230, 248;
 Germany, 109, 128, 169, 170, 173;
 Greece, 327; Hungary, 278,
 279; Italy, 335, 343; Manitoba,
 71; Mediterranean, 310, 313;
 new lands' production, 70; North
 America, 275; Norway, 26, 31;
 Poland, 98, 100, 104; Rumania,
 267, 289; Russia, 58, 66, 68, 70,
 71, 79, 88, 90; Saskatchewan,
 71; Spain, 358, 359, 367;
 Switzerland, 200; world produc-
 tion, 377; Yugoslavia and Bul-
 garia, 297, 298
 White Russia, 83-84, 94
 White Sea, 20, 62, 75, 86
 Wieliczka, 100, 130
 Wiesbaden, 164, 167
 Wilno—*see* Vilna
 Windau (Ventspils), 22, 58
 Wine, **225-226**; Albania, 331;
 Algeria, 226; Alicante, 362;
 Asti, 343; Bordeaux, 231; Bur-
 gundy, 218, 223, 225; cham-
 pagne, 225, 241; claret, 225, 230;
 Czechoslovakia, 285; European
 production, 249; French ex-
 ports, 226, 250; French im-
 ports, 226, 335; French produc-
 tion, 225, 378; Graves, 230;

A GEOGRAPHY OF EUROPE

- Hock, 225; Italy, 226, 335, 340, 343, 378; Maritza valley, 298; Marsala, 340; Mediterranean, 313; Mediterranean trade, 264; Languedoc, 230; Médoc, 230; Moselle, 225; port, 365; Portugal, 366, 367; Saumur, 230, 232; sherry, 359; Spanish exports, 367; Tokay, 279; Vikings, 59; world production, 378
 Winter sports, 168, 272, 283
 Winterthur, 183, 204
 Wireless sets, 82, 119
 Wood-pulp, 31, 35, 44, 45, 53, 86, 379
 Wool: Argentina, 146; Bulgaria, 298; climate, **314**; Czechoslovakia, 283; development of industry, **125-126**; Dunkirk, 238; Flanders, 145; French imports, 250; Italy, 343, 348; Lower Rhine Highlands, 164; Marseilles, 221; Norwich, 241; peasant craft, 97, 145; Poland, 99, 100; Russia, 88; Saxony, 131; Spain, 353; Switzerland, 172, 199, 202, 203; world production, 379
 Woollens: Barcelona, 362; Belgium, 145, 146; Budapest, 276; Czechoslovakia, 281, 286; France, 146, 232, 238, 240, 241, 244, 245; Germany, 110, 128, 129, 130, 131, 137, 140, 169; Holland, 146, 161; Italy, 346, 348; Sweden, 44; Switzerland, 201, 203; Vienna, 270, 273; Viking trade, 264; Warsaw, 99
 Worms, 175
 Wuppertal, 383
 Württemberg, 177
 XANTH, 331
 YASSY, 291, 384
 Yonne, river, 246
 Ypres, 146
 Yssel, Lake, 157
 Yugoslavia, **291-302, 380, 381**, 385, 386; Central Europe and, 252; climate, 310; people, 261, 279; political, 253, 260, 266, 273, 274, 300, 327, 332, 347; wheat, 249
 ZAGREB (Agram), 269, 298, 299
 Zagros Mountains, 254
 Zante, 330
 Zara, 269, 299
 Zaragoza, 216, 359, 384
 Zealand, 54
 Zeebrugge, 142, 149, 239
 Zeeland, 160
 Zeiss works, 132
 Zeppelins, 177
 Zermatt, 183, 190
 Zinc: Belgium, 148, 150; Holland, 155; Malmedy, 178; Ruhr, 137; Silesia, 100, 127, 128; Urals, 90
 Zlin, 282
 Zug, Lake, 181
 Zuider Zee, 155, 156, 157, 158, 160, 161, 162
 Zürich, town, 167, 183, 184, 204, 385
 Zürich, Lake, 181
 Zutphen, 162
 Zwickau, 127, 131
 Zwolle, 162
 Zwyn, 146